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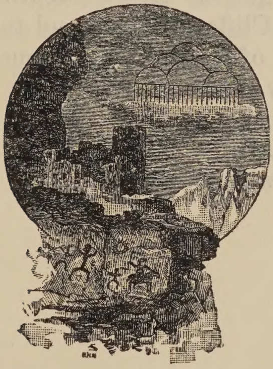
SMITHSONIAN INSTITUTION
U.S
BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 167

ARCHEOLOGICAL INVESTIGATIONS AT THE MOUTH OF THE AMAZON

By
BETTY J. MEGGERS and CLIFFORD EVANS



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1957

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C.

LETTER OF TRANSMITTAL

Smithsonian Institution,
Bureau of American Ethnology,
Washington, D. C., June 20, 1956.

Sir: I have the honor to transmit herewith a manuscript entitled "Archeological Investigations at the Mouth of the Amazon," by Betty J. Meggers and Clifford Evans, and to recommend that it be published as a bulletin of the Bureau of American Ethnology.

Very respectfully yours,

M. W. Stirling, *Director.*

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

May this report be one of many memorials to

WENDELL C. BENNETT

by those like us whom he with friendly guidance helped along the road to anthropological careers

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PREFACE

Any field project undertaken in the interior of a country away from the settled metropolitan centers of the world depends so heavily on personal contacts, friendliness, hospitality, and cooperation for its successful completion that it is impossible to single out each individual to whom special mention is due. However, there are a number of people whose contributions were instrumental in making our work possible, and we wish to take this opportunity to express our sincere appreciation to them for their generous assistance and cooperation.

For his enthusiastic interest in, and active support of our proposal to do archeological research at the mouth of the Amazon, we are particularly indebted to Dr. William Duncan Strong, Loubat professor of anthropology and at that time chairman of the Department of Anthropology of Columbia University. It is no exaggeration to say that without his aid, our plans would never have been realized. Dr. Charles Wagley and Dr. Julian H. Steward, also of the Columbia faculty, aided us in details of the planning and together with Dr. Strong read and criticized the portions of this report that were submitted as doctoral dissertations to Columbia University. We are indebted to Dr. Wendell C. Bennett for both encouragement and advice when our plans were in a formative stage, and for friendly and continuing interest in our work and its results. We deeply regret that he never saw the completed monograph, but hope that in dedicating it to him we are able to convey an impression of what his friendly guidance meant to those of us who never had the privilege of being his students. For showing an interest in supporting the first intensive archeological field work in the Amazon Valley we wish to record our gratitude to the Wenner-Gren Foundation for Anthropological Research, Inc. (at that time called The Viking Fund, Inc.) and to the William Bayard Cutting Traveling Fellowship Fund of Columbia University.

The successful launching of the expedition in Brazil was due to the cooperation of Sra. Heloisa Alberto Torres, then director of the Museu Nacional in Rio de Janeiro, who offered us permission to work under the auspices of that museum. For her scientific and official assistance as well as her friendly interest, aid, and advice from the beginning to the end of the trip, we offer our warmest thanks. Sra. Maria Alberto Torres was also extremely helpful in guiding us through the intricacies of official details in a foreign country. Dr. and Mrs. Charles Wagley, who preceded us to Rio de Janeiro and Belém, did a great deal to pave the way for our reception.

In Belém, we are particularly obligated to Sr. Machado Coelho, at that time director of the Museu Paraense Emilio Goeldi, for his cooperation and for placing at our disposal a house on the museum grounds in which we lived while classifying and analyzing our excavated materials; to Sr. Frederico Barata, who not only allowed us to examine his collection of archeological specimens but was ready to aid us in any other way that was within his capacity; to Sr. Eurico de Melo Cardoso Fernandes, whose interest in anthropology was primarily responsible for our being invited to work in the Territory of Amapá; to Sr. José Ambrosio de Miranda Pombo, who was instrumental in obtaining permission for us to work on the Island of Mexiana and in the Municipio of Chaves, Marajó Island; to José F. Cottim, who volunteered his services as our interpreter in official situations before our knowledge of Portuguese was adequate; to Benjamin Pinto y Sousa, who patiently washed and numbered all our sherds and performed numerous other indispensable services both on Caviana and in Belém; to Dr. Gaspar Cesar de Andrade, director of the Serviço Especial de Saúde Pública in Belém, and his staff for certain medical supplies and advice; to Dr. Acylino de Leão, delegate to the Conselho de Fiscalização de Expedições Artisticas e Cientificas, for his understanding and cooperation in official matters regarding the archeological collections; to Sr. Fritz Ackermann and Sr. Felisberto de Camargo for permitting us to study their private archeological collections. At various intervals while in Belém we spent many enjoyable hours in the homes of Mr. and Mrs. George T. Colman, Mr. and Mrs. Gordon Pickerell, Mr. and Mrs. M. L. Albuquerque, and Sr. and Sra. Philippe Farah. Their hospitality did much to make our months in Belém pleasant memories.

While in the Territory of Amapá we became indebted foremost to Governor Janary Gentil Nunes, who, because of his interest in the Territory of Amapá and his eagerness to develop all its potentialities, gave us overwhelming cooperation and placed at our disposal everything from motorboats to airplanes, maps, and workmen in order to expedite our research before the rainy season reached its height. Thanks to him, we were able to accomplish here in 1 month almost as much as we had been able to do in 4 months on the islands. Sr. Newton Wilson Cardoso, director of the newly formed Museu Territorial, accompanied us on all our trips here to learn the technique of archeological field survey and excavation. He proved so apt a pupil that we were able to include in our archeological analysis of the region additional sites and materials he later collected by himself. We wish to thank Sr. Fritz Ackermann, for making available to us the information he had recorded about archeological sites during geological surveys. For their friendliness, cooperation, and hospitality while we were in the Territory of Amapá, we are also indebted to Sr. and Sra. Janary Gentil Nunes, Sr. and Sra. José Ferreira Teixeira, Sr. Raul Montero Valdez, Sr. Benedito José Carneiro de Amorim, Sr. Hermogenes da Lima Filho, Sr. Atahualpa Maranhão, and Prof. José Tostes.

The carrying out of extensive archeological survey in north Brazil involves the granting of permission by land owners to trespass, excavate and in many cases also to use the ranch house for headquarters. For granting their permission to work on their property, for placing at our disposal the facilities of the *fazendas*, and for assistance in numerous other ways, we wish to thank the following persons: On Marajó Island—Sr. and Sra. Dionysio Bentes de Carvalho, Sr. Rodolfo Chermont, Sr., Sr. Rodolfo Chermont, Jr., Sr. Armando Teixeira, Sr. Lauro de Miranda Lobato, Sr. Raul Bittencourt, Capt. Amáncio Antonio dos Santos, Sr. Raimundo Brito, Sr. Noe Xavier de Andrade, Sr. Fernando Teixeira; on Mexiana Island—the members of the Mexiana Cooperativa, especially Sr. Edgar Guamá whose scientific interests permitted us to enjoy many evenings of pleasant conversation and whose cooperation was absolutely overwhelming, and Sra. Lelio Lobato for her friendly hospitality while at the main *fazenda* house; on Caviana Island—Sr. Dionysio Bentes de Carvalho, Coronel Lusignan Dias, Dr. Claudio Dias, Dr. Armando Morelli, Sr. Mario Lobato, Sr. Angelino Lobato, Sr. Antero da Silva Melo Filho, Sr. Benjamin Pinto e Sousa, Sr. and Sra. Tiburcio da Silva Melo, Sr. Nadir Pinto e Sousa, Sr. and Sra. Manoel Alves da Silva.

The most extensive archeological investigations in the Amazon area are those made by Nimuendajú during the 1920's under the auspices of the Ethnographical Museum, Göteborg, Sweden. The unpublished notes have been edited by Stig Rydén, supplemented with detailed descriptions of the specimens in Göteborg Museum collections. Rydén has generously made available to us this manuscript (Rydén, MS.) and photographs of the plates, and has granted permission to quote passages in this report. His cooperation has added considerable comparative information to the sections on Marajó, Caviana, and the Territory of Amapá. It is a pleasure to acknowledge our indebtedness to him.

In the technical analysis of certain specimens, we wish to thank the following scientists for their cooperation, information, and expert opinions: Marshall T. Newman, Division of Physical Anthropology, United States National Museum, for the study of extremely fragmentary human bone material; Doris M. Cochran, Division of Reptiles and Amphibians, United States National Museum, for identification of reptile bones; Junius B. Bird, Department of Anthropology, American Museum of Natural History, for comments on clay fragments with cord impressions; Arthur Woodward, Glenn A. Black, and Kenneth Kidd for analysis of the glass trade beads.

There are two people whose exceptional contribution to the success of our work requires special acknowledgement. Mr. George T. Colman, United States Consul at Belém, helped us immeasurably by seeing our equipment through the customs and acting as intermediary in similar official situations at no little saving to us in time and mental anguish. The interest he and Mrs. Colman showed in us and our work is typical of their enthusiasm for all things pertaining to the culture and people of Brazil. Peter Paul Hilbert, ethnologist of the Museu Paraense Emilio Goeldi in Belém, accompanied us on our second trip to Marajó Island, took his indoctrination into field archeology with aplomb, and has since returned to the Island and done further work. His generosity in putting his data at our disposal is evident in the frequency with which he has been quoted in the Marajo section of this report, and it is difficult to express accurately the extent of our debt to him for this contribution.

Finally, we would like to record our warm thanks to the *caboclos* who were our guides, our workmen, our companions, and frequently our hosts. They and their fellow Brazilians in all walks of life made our stay in Brazil so pleasant, as well as scientifically rewarding, that we are eager to return.

The third and fourth sections of this report formed the nuclei of dissertations submitted to the Faculty of Political Science of Columbia University in partial satisfaction of the requirements for the degree of doctor of philosophy. Clifford Evans presented "The Archeology of the Territory of Amapá, Brazil (Brazilian Guiana)" in March 1950, and Betty J. Meggers presented "The Archeological Sequence on Marajó Island, Brazil" in February 1952. Now, both of these sections have been reorganized and partly rewritten for inclusion in the final monograph, and all statements, conclusions, and interpretations included herein supersede any previously made which may slightly differ.

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C. E.

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ARCHEOLOGICAL INVESTIGATIONS AT THE MOUTH OF THE AMAZON

By Betty J. Meggers and Clifford Evans

INTRODUCTION

BACKGROUND OF THE LOWER AMAZON ARCHEOLOGICAL EXPEDITION

Prior to the introduction of extensive survey and stratigraphic excavation by trained archeologists, the interpretation of the archeology of an area must be based on the more elaborate and decorative pieces of pottery that have found their way into museums and on vague comments recorded by travelers in pursuit of adventure or by scientists after other kinds of information. This situation applied to the mouth of the Amazon prior to 1948. In the 19th century, Marajó Island in particular exerted a great fascination on numerous scientists as well as laymen. The Marajoara mounds were first recorded in the 18th century by an anonymous visitor who was impressed by the well-made vessels they contained. When the Amazon was undergoing exploration during the latter part of the 19th century by geologists, botanists, general naturalists, and laymen, these sites were frequently visited and examined. Among those who wrote detailed accounts of their activities and impressions are José Vieira Couto de Magalhães, Domingo Soares Ferreira Penna, Joseph B. Steere, Orville A. Derby, Charles F. Hartt, and Ladislau Netto. In 1895 and 1896 Emilio Goeldi and Aureliano Lima Guedes conducted survey and excavation in the Territory of Amapá and reported the now well-known sites at Cunaní and Maracá. Most of these men made collections of the more elaborate types of pottery and these were sent to museums in North America and Brazil.

In the early decades of the 20th century, the mounds of Marajó continued to be visited and excavated. Those who conducted the most extensive explorations represented two new categories of professional allegiance: Journalists, like Algot Lange who dug in Pacoval in 1913 and Desmond Holdridge who examined several mounds east of Lago Ararí in 1930; and anthropologists, including W. C. Farabee who made extensive excavations in 1914 at Fortaleza and in 1916 at the Camutins, Curt Nimuendajú who tested sites in the Cabo Maguarí area in 1922, Heloisa Alberto Torres who visited Pacoval do Cururú in 1930, and Antonio Mordini who excavated at Teso dos Gentios in 1926 and Panellas in 1928. It is unfortunate that none of these individuals has written a detailed account of his findings except Lange (1914), whose excavation technique is unreliable. Farabee left detailed field notes on some of his work, but they are largely rendered useless by the loss of the pottery identifications. However, he deposited a large collection of complete vessels and a sample of sherds at the University Museum in Philadelphia. Thus, in spite of a long sequence of articles and numerous visits of inspection and even excavation, the descriptions of Marajoara Phase remains are so incomplete and indefinite that they serve more to tantalize than to inform.

Our interest in the archeological situation at the mouth of the Amazon dates from 1943, when Meggers began an analysis and interpretation of a small collection from Marajó Island made in 1871 by J. B. Steere, and deposited at the University Museums in Ann Arbor, Mich. (Meggers, 1947). This study revealed the meagerness and indefiniteness of the information on the Marajoara Phase sites and their contents, in spite of the relatively voluminous literature, and indicated that no reliable conclusions could be drawn without stratigraphic excavation. This conclusion was strengthened after a detailed examination was made of the larger and more representative Lange collection from Pacoval at the American Museum of Natural History in New York. A classification of the sherds by surface treatment (plain, slipped, double slipped) and decoration (incision, excision, painting) revealed a variety of types, some simple and others complex. The probable selectivity of the collection, coupled with Lange's method of excavation (p. 312), indicated any efforts to deduce temporal significance from the differences in decorative styles would be purely speculative. The further the study of these museum collections proceeded, the more obvious became the need for scientific fieldwork as a basis for the interpretation of the archeological remains at the mouth of the Amazon.

With all these factors in mind the authors, then graduate students in the Department of Anthropology at Columbia University, drafted a program for Lower Amazon archeological exploration. The research problems were discussed in detail with Drs. Wm. Duncan Strong, Julian H. Steward, Charles Wagley, Wendell C. Bennett, and Gordon R. Willey, and the interest with which these individuals received the project led to correspondence with officials in Brazil to investigate the possibility of their cooperation. Although the details were not fully completed by correspondence, sufficient encouragement was received from Dr. Heloisa Alberto Torres, then director of the Museu

Nacional in Rio de Janeiro, Brazil, to warrant proceeding with a formal application for research funds and with preparations for the expedition. Through the generosity of the Wenner-Gren Foundation for Anthropological Research, Inc. (at that time known as The Viking Fund, Inc.) of New York a joint research grant was obtained for a year of "Archaeological Study in the Lower Amazon, Brazil" from July 1, 1948 to July 1, 1949. Dr. Wm. Duncan Strong, then Chairman of the Department of Anthropology of Columbia University presented the research project to the authorities of the University with the result that further financial assistance was received in the form of a William Bayard Cutting Traveling Fellowship. Through Dr. Strong's cooperation we were permitted to work as representatives of the Department of Anthropology of Columbia University, an arrangement which aided our work immensely and facilitated our relations with Brazilian authorities.

Beyond the procedures followed above to guarantee the financial and scientific support of the project, a number of difficulties in planning were encountered. In spite of the fact that we talked to several people who had spent considerable time in the tropical forest regions of South America, no one was able to offer any concrete advice on such specific things as field equipment needs, or on the problems and possibilities of labor, transportation, etc., beyond the limits of the main course of the Amazon or its major tributaries. Relying on Evans' prior experience in Peru, we consequently sent down many items that had seemed to be necessary field equipment, but which later proved completely useless or impractical in the lowland tropics and were shipped back to a central base at the first opportunity.

ITINERARY

We left Miami, Fla., on July 1, 1948, flying directly to Rio de Janeiro to complete official negotiations with the Brazilian authorities. Our arrival was preceded by that of Dr. and Mrs. Charles Wagley who had come to Brazil under UNESCO auspices to conduct research for the International Hylean Amazon Institute (Wagley, 1953). Not only did the Wagleys pave our way in Rio de Janeiro, but they preceded us to Belém, Pará, where their announcement of our arrival made our reception more cordial than it otherwise would have been. In Rio de Janeiro, Dr. Heloisa Alberto Torres, director of the Museu Nacional, offered us her complete scientific cooperation and allowed us to work under the auspices of the museum. In addition, her friendly aid, hospitality, and assistance expedited the acquisition of the necessary official papers with the result that on July 17 we flew north to Belém, the capital of the State of Pará and the gateway to the Amazon. In spite of a handful of letters of introduction provided by Dr. Torres, the contacts the Wagleys had made for us, and the cooperation of Dr. Machado Coelho, director of the Museu Goeldi, we were delayed for 6 weeks in town by problems surrounding the negotiation with officials and landowners for permission to undertake archeological investigations on their property. Since Brazilian federal law regarding antiquities or subsurface rights does not automatically grant permission to trespass nor does it actually protect the archeological sites, our itinerary was controlled by the willingness of the owners to cooperate and their preference as to when we should visit their property.

A workable schedule was finally achieved and we left Belém August 20, 1948, by wood-burning steamer through the inland route to Chaves on the north coast of the Island of Marajó. Chaves served as our first base of operations, from which excavations were conducted at Sites J–1 through J–5. On September 2, we moved eastward to Fazenda Santa Catarina, where a new base was established. From there and the various outstations of the Fazenda we worked until September 23, covering Sites J–6 through J–12. Since the owner-manager of Mexiana Island had requested that our visit coincide with his presence on the Island, we left Marajó Island at this time and established a new base of operations at Fazenda Nazaré on Mexiana. Sites M–1 through M–7 were studied while on Mexiana Island from September 24 to October 22 when we moved to Caviana Island. A base of operations was established at Fazenda São João da Caridade and Sites C–1 through C–15 were excavated between October 22 and December 14. During this period we returned on November 19 to Chaves in order to examine further Site J–4. Before going back to Caviana Island on November 23 we went along the north coast of Marajó toward the east to examine Site J–13. Our baggage had become of some considerable size by this time, even though the Marajó sherds had been shipped back to Belém earlier, and since we were unable to arrange successfully for direct transportation from Caviana to Macapá in the Territory of Amapá, we hired a sailboat to bring all the specimens into Belém by way of the coastal route while we returned to Belém via the inland steamer which was to stop in Chaves on December 18 on its monthly trip. Arriving in Belém on December 21, we made our headquarters in a house provided on the grounds of the Museu Paraense Emilio Goeldi, which was to serve not only as our living quarters but as an excellent laboratory space for storing and studying the numerous archeological specimens. After the baggage arrived from the islands, along with a general handyman and assistant, Benjamin Pinto e Sousa, the work was laid out in the laboratory so that he could wash and number all the specimens collected so far while we returned to the field for another month before the rainy season began.

On January 2, 1949, we flew from Belém to Macapá, the capital of the Federal Territory of Amapá, where we had been invited to undertake archeological investigations by the Governor, Janary Gentil Nunes. Through his magnificent cooperation all the governmental facilities, including motor launches, trucks, airplanes, maps, archival records, and obscure reference books were put at our disposal so that our work in the Territory of Amapá would be facilitated as much as possible in the limited time available. We were accompanied on all our trips by Sr. Newton Wilson Cardoso, director of the newly formed Museu Territorial. As a result of some specimens brought back by a geologist, Fritz Ackermann, from the Rio Piçacá, we began with a survey of the Rio Vilanova and its tributaries. This resulted in data on Sites A–1 through A–6 and A–13. From January 15 to 21, we explored the Rio Araguarí-Amaparí without finding any sites. On January 22 we flew to Amapá and worked at Sites A–7 through A–12 until January 30, when we returned to Macapá. The remaining few days in Macapá were spent in getting data on Site A–14 and in photographing and taking notes on the various specimens that Sr. Cardoso had in his custody in the Museu Territorial. On February 4 we returned to Belém by air and immediately moved into our house-laboratory on the Museu Goeldi grounds.

The rainy season was now at its height and many of the specimen bags and labels showed such severe effects of mildew that some of the identifications were almost illegible. We began to work immediately on the classification of the pottery while Sr. Benjamin Pinto e Sousa continued to wash and number the rest of the sherds. In addition to analyzing all our own sherd material and photographing all the complete specimens and representative samples of the pottery types, we also classified, described, and photographed all the specimens in the Museu Goeldi which had any sort of provenience data, as well as some specimens in the private collections of Sr. Frederico Barata and Sr. Fritz Ackermann. This work continued until May 5, when, although the rainy season lasted somewhat longer than was normal, we left for a final trip to the interior of Marajó Island to collect data on the elaborate Marajoara Phase burial mound complex.

On May 6, accompanied by Peter Paul Hilbert, the ethnologist of the Museu Goeldi, we sailed from Belém to the center of Marajó Island, making our headquarters at Fazenda Campo Limpo near the upper Rio Anajás. Sites J–14, J–15 (with 17 artificial mounds), and J–16 were excavated in the area and we returned to Belém on May 23. The remaining time in Belém was spent in completing the analysis of the previously excavated materials as well as the newly acquired specimens from the Marajoara mound cultures. On June 23 we flew to Macapá for the day to deliver a talk on the results of our work in the Territory of Amapá. While there we found that Sr. Newton Wilson Cardoso had visited several more sites since working with us and had proved himself an apt pupil by taking accurate notes and keeping materials by site, as well as making some stratigraphic excavations. He kindly allowed us to take this material back to Belém for classification and study.

The last week or so in Belém was somewhat hectic. Not only did we have to pack our equipment, but the final details of the study of all the materials excavated had to be completed and a division had to be made into type collections to be left at the Museu Goeldi in Belém, the Museu Territorial in Macapá, the Museu Nacional in Rio de Janeiro, and smaller samples to be exported for distribution to museums in the United States.[1] On July 1, we flew from Belém to Belo Horizonte, Minas Gerais, where for several days we visited the caves of the Lagôa Santa region with Mr. H. V. Walter and Sr. Josephat Paula Penna (Evans, 1950). On July 4 we continued to Rio de Janeiro to close our official business with the Museu Nacional and to report to Dr. Heloisa Alberto Torres the progress of our year's fieldwork in the Amazon. After paying respects to the many friends we had made in both Rio de Janeiro and in the north, we left Brazil by air arriving in New York on July 14, 1949.

PROBLEMS AND COMPROMISES IN FIELD TECHNIQUE

Archeology in the tropical forest of South America presents, in addition to the usual problems, many difficulties that are not encountered in the more arid or more accessible parts of the New World. Manuals of field procedure and precision methods of excavation technique frequently cannot be followed, and the field situation must be met with an understanding of what is pertinent and what is unprofitable in order to gain the maximum of information in the shortest possible time. Otherwise, one could easily spend a full year in the field and have very little to show for it. This we learned, however, only by experience. For the benefit of those who may follow us, we will outline briefly some of the major problems and compromises.

Evans, who had recently returned from 9 months of fieldwork on the coast of Peru, superintended the assembling of the field equipment. We included all those items that had been essential or helpful in that work, and some of these proved to be even more important in the tropical environment, particularly specimen bags of unbleached muslin, linen tags, and duplicate sets of field notes. In the hope that aerial photographs might reveal the location of the Marajoara mounds as they do ruins on the coast of Peru, we secured permission to examine those taken of Marajó Island by the United States Air Force, going to some difficulty since they were still classified as "confidential." The results were highly disappointing because the forest growth obliterated all but the most abrupt and extreme alterations in the terrain. Later, after experience on the ground and in low elevation flights over the savanna and jungle, we became fully convinced that aerial photography has nothing to offer as a means of locating archeological sites in the Amazon area. However, we derived one important benefit from the aerial survey of the Amazon. As a result of this work, the Aeronautical Chart Service of the United States Army Air Force has been able to revise and correct its World Aeronautical Charts to such a degree of accuracy that when on the ground we could follow each bend and curve of all but the smallest streams. From the standpoint of a more useful scale for groundwork, the Aeronautical Chart Service made available the Preliminary Work Sheets, Scale 1:500,000, from which the final copies of the World Aeronautical Charts, Scale 1:1,000,000, are made. Not only did these maps save us considerable time and trouble, but they gave a degree of accuracy to the site locations and the geographical features of the area that otherwise could not have been attained.

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[1] These type collections have been deposited at the United States National Museum, the University Museum in Philadelphia, the American Museum of Natural History, the Peabody Museum of Yale University, the Museum of Anthropology at the University of Michigan, and the Museum of Anthropology of the University of California.

In addition to these excellent maps, we took along surveying equipment, such as a plane table and tripod, alidade, and stadia rod, on the assumption these materials would be useful in the mapping of each archeological site. Two weeks in the field demonstrated that not only it was impossible to carry around this equipment, but also it was completely nonfunctional for several reasons: (1) Generally, the sites were not large enough or with enough surface features to warrant the use of the alidade and plane table; (2) to sight a line through vegetation required a cutting operation that was not economically feasible or practical; (3) a sufficiently accurate map could be obtained with greater ease and in less time with grid paper, a compass, a tape, and a hand level. In other words, we made a compromise in technique here because if we had not done so we would have had to sacrifice results in terms of the number of sites we could examine and we are convinced that a site map so derived would show no more pertinent information than is now available on our various plans.

Field technique must be adaptable to the situation so that the most scientific data can be obtained under the peculiar local circumstances. To demonstrate the point, it is pertinent to mention why we used the system of sinking several small strata cuts, generally 1.5 by 1.5 meters, into various sections of the site instead of digging a long trench or a larger, single strata cut. Again, the site situation is the determining factor. In all the sites of the Tropical Forest level of culture the accumulation of refuse is too shallow to make it essential to dig a large cut to provide sufficient space to throw out the dirt as the cut increases in depth. The nature of the refuse makes it more functional to place several small cuts in various parts of a site in order to test more of the occupation zone. Trenches are not feasible because of the quantity of trees and their root systems that cover most sites. A series of small cuts can be finished in a limited time going from the surface to sterile, whereas a larger excavation might not reach completion in the time available at certain sites. The question has been raised as to why we did not trench the large Marajoara mounds in two directions. Our answer is threefold: (1) Property owners were extremely hesitant to allow any digging in their mounds because they offer the only high ground for their cattle during the wet season and also because they do not want their "treasure" disturbed. Permission to dig even small test holes was difficult to obtain and permission to trench the mounds would never have been granted. (2) Sufficient labor for extensive trenching activities was not available at any cost. (3) Scientifically speaking, it was far more important to test several sites than restrict ourselves by extensive excavation on one site. This approach has permitted us to evaluate and interpret more extensive digging conducted earlier by Farabee (MS., 1914) and others.

For those who have not had the fortune or misfortune, depending on one's viewpoint, to work in Amazon archeology, the tremendous problem created by roots cannot be overemphasized. Although the cuts were laid out originally with square sides, the first layer of digging always produced roots that often caused a slight modification of shape; however, the area covered in each cut was always well controlled. Not only was it impossible to polish the walls of strata cuts, but if they had been polished they would have shown no details. The intense rainfall, high humidity, and easily leached soil take out any materials that would make a clear-cut line of strata distinguishable on the walls of cuts. In the artificial mounds of the Marajoara Phase, soil conditions did vary and here it was possible to smooth the walls of the cut sufficiently to plot the various features. In all the other sites the excavation technique was careful and well controlled, but not carried to the point of diminishing returns by trying to follow out preconceived ideas that no strata cut is properly executed unless the ritual of polishing and smoothing is faithfully carried out. In other words, the entire excavation technique in Amazon archeology can be summarized in a few words: not once was technique abandoned because of a lack of interest, nor was it modified to the extent that the data obtained would be unreliable; but it was necessary at all times to be realistic about technique and to apply the method to the peculiar local situation that would bring results, rather than blindly become a slave to technique irrespective of the total results.

Rain and humidity create problems that can only be appreciated if one has tried to work in a tropical forest situation in part of the rainy season. Granted, we stayed in Belém classifying our materials at the height of the rainy season, but some of the fieldwork had to be conducted during this part of the year. Tarpaulins were used to cover the excavations to keep them from filling with water during a downpour, but even then we were digging in mud. Survey trips in dugouts up streams and rivers, going from intense sun one hour to a heavy shower the next, made it difficult to keep notes and photographic equipment dry. Cameras and film had to be kept in airtight cans dehydrated with silica gel. The intense rainfall in the Amazon not only creates physical hazards that restrict the work and actually makes it impossible to undertake archeological fieldwork during February, March, and April, but it reduces the archeological evidence to objects of stone or pottery. Postholes, matting, thatching, and other details of house construction are so quickly destroyed by decay that unless the posts burned (apparently an extremely rare situation) there is absolutely no evidence of such features. Proof of this factor is easily obtained by digging on the site of a former *caboclo* house where the exact position is known. If over 5 years have passed, the area has passed into secondary growth, posts and postholes have disappeared, all decayed vegetable matter has been leached out or washed away and except for areas darkened with charcoal or ashes there is no sign of the occupation other than occasional broken artifacts. Bone materials destroy rapidly even in secondary urn burials. Except in those urns in which the water supply was constant (in other words the jar broke and was filled by rain or by seepage and remained moist throughout the dry season) or where the urn and its lid had kept the contents constantly dry, bone has turned to dust, usually distinguishable only as fine, white flecks in light gray to black soil. The few bone scraps we were able to salvage were in extremely poor condition and had to be treated with a dehydrating agent mixed with a stabilizing cement, such as acetone and duco or acetone and ambroid.

None of the problems and compromises mentioned so far have been dictated by another situation inherent in the Amazon area, one that has a decided effect on the method of carrying out the fieldwork—the lack of modern transportation facilities and the sparse population. In spite of all the modern mechanical aids to mankind, one is reduced to the necessity of utilizing the primitive, local means of transportation. More than once after a slow and difficult dugout trip we wished for an outboard motor, but there were many other situations in which paddling in a dugout was 100 percent more practical than traveling by outboard motor. To use motors it is necessary to haul all the gasoline from a main base and establish caches of fuel. To do this would involve organization and planning of supplies that would be more time consuming and frustrating in the long run than the use of local transportation. By taking advantage of the larger sailboats, sailboats with auxiliary motors, or launches to traverse some of the longer distances, traveling light when going by dugout, and depositing our collections and main equipment at various bases, we were able to reach all areas fairly easily. Those who have never traveled in the interior of the Amazon, along the smaller streams where only a hunter, wood cutter, or rubber cutter might live, sometimes find it difficult to understand the importance of the dugout as a means of transportation. Not only is it a sturdy craft, capable of taking a lot of punishment from submerged debris, but it is quite stable, easy to propel and will hold a fairly large load. Nevertheless, in archeology more than once we had to keep in mind the fact that, although we went "empty handed" to a site except for a few digging tools, specimen bags, and photographic equipment, we always returned laden down with sherds. This is not to say that we *now* feel that our final results have suffered as a result of the limitation of transportation (after completion of the study, we have only one site that we feel could be better interpreted with another day's work), but several times we had to take into consideration the fact that another bag of surface material or another test excavation would be out of the question because of the lack of hands to carry the resulting sherds back to the dugout, or because the waterline of the dugout would be lowered below the margin of safety. Archeology in the Amazon is not like that of areas of the world where one can drive to the site, load the car down, and then drive back again if necessary.

Fortunately, the cultures are simple, the sites are small, and a maximum of data can be secured with a minimum of digging. The problem of labor in the Amazon is much more severe than in many other parts of the New World. Most of the people live by working on cattle ranches, cutting wood, gathering rubber, or by hunting. Miles and miles of rivers and streams can be traveled without seeing any human habitation. Local labor is consequently not available in quantity. If one had the financial resources to buy a boat large enough to house a crew of men and to transport food for this crew, then labor could be brought from Belém to the interior. However, this is not practical for many reasons. The expense of such a project would be prohibitive on the budget of most New World archeological expeditions; the laborers would not be familiar with the local situation and it would still be necessary to hire local guides; permission from landowners to trespass with such a large crew would not be easy to obtain; transportation of such a large crew to more remote sites would overtax the available facilities. As a result of this acute labor shortage and the necessity of constantly changing guides as we moved from one area to another, we found ourselves doing a larger part of the actual excavation work than would normally be expected. Only during the first month on Marajó did we have the same workmen long enough for us to train them to work in a strata cut. Otherwise the guide went hunting or dug in another part of the site for sherds to increase the sample from the site. In the long run, however, such a system means that one does not have to question the data when analysis might suggest inadequate or careless excavation technique that can so often be blamed on an inexperienced crew.

Looking back on the Amazon situation and having the benefit of a second tropical forest expedition (Evans and Meggers, MS.) behind us before writing this introduction, we believe we have found the equipment best suited for South American tropical forest archeology, as well as developed the ability to travel light with a minimum of unessential equipment but with a maximum of protection for such things as cameras, exposed film, notes, etc. In spite of this we still have no general solution for the problems of transportation. Regardless of how much planning is done beforehand or how much money one has available, there is no way to avoid traveling by foot, by horse, by bullock, by dugout, and by sailboat, even though occasionally the airplane, jeep, truck, car, outboard motor or launch may be thrown in for the sake of variety. In other words, the local situation frequently cannot be predicted. One might carry an outboard motor and gasoline for weeks and then discover that the local conditions of a particular stream make use of the motor impossible; and paddling a dugout the only resort.

There is one universal fact, however, and that is the contribution of the local guide to the success of South American tropical forest archeology. This guide is essential and invaluable not only because of his knowledge of the location of sites along a specific stream and in the adjoining area, because of his hospitality, his ability to obtain extra fish and game to supplement the food supply, and the use of his thatched shelter as a base, but also from the standpoint of his intimate knowledge of the local custom, the local problems, the local geographic features, and most of all for his ability to arrange for an extra helper, a dugout, an extra set of paddles or whatever else might be needed. A good guide can anticipate the archeologist's requirements and make archeology in the Amazon more than just hard work.

ORGANIZATION OF THE REPORT

Archeologists attempting to organize the description of a variety of cultures occupying a relatively large geographical area that is broken into several well-defined units are faced with various problems in determining the best method of presentation. They must find a logical order that will meet the needs of the rare student or specialist who will read from cover to cover in the proper direction, and they must also anticipate and attempt to provide for the larger audience that will proceed in reverse order and frequently never probe deeper than the general conclusions. The organization of this report attempts to meet the requirements of both types of readers.

Analysis of the archeological remains brought out the fact that the natural geographical divisions were correlated with clearly defined cultural boundaries. A twofold separation into the mainland (Territory of Amapá) and the islands (Marajó, Mexiana, and Caviana) was therefore not simply an arbitrary convenience but rather an aid to the understanding of the archeological sequences. Further subdivision of the islands into Marajó on the one hand and Mexiana and Caviana on the other was warranted by the widely different roles played in local prehistory. Within each of these areal divisions the geographical description is followed by the discussion of the archeological cultures in chronological order. A uniform outline was employed to assure equal coverage and to facilitate comparison. In addition to the details of the sites and their excavation and the analysis and description of the artifacts, this gives a summary of any information from other investigations and concludes with a condensation of the diagnostic features of the culture as represented by or deduced from the archeological remains. Each geographical unit closes with a detailed analysis of the evidence for the chronological position of the cultures in the sequence and of their probable affiliations.

One culture, the Aruã, is found on all three of the islands and on the mainland, and after considerable deliberation we decided to treat it in the following manner. The details of site description and excavation, and the information from other investigations are given separately in each of the areas; data on Aruã sites in the Territory of Amapá are included in that section and similar information on sites on Marajó are given under that island. Since the majority of the sites of this culture are located on Mexiana and Caviana, and since the Aruã is the only pottery-making group to have dominated those islands, the analysis of the pottery and other artifacts, the summary of diagnostic features, and the detailed interpretation of the culture are given in this part of the report.

One of the disadvantages of archeology in the tropical forest is that the climate soon disposes of all but the most durable remains, in this case objects of pottery and stone. As a result, any attempt at reconstruction of the cultural pattern must be based on knowledge of living cultures. Since we have made the effort to secure the maximum amount of information from the archeological remains, and have drawn heavily on ethnographic clues for this purpose, the report begins with a summary of the Tropical Forest Pattern of culture, emphasizing material traits and generalizing sociopolitical and religious aspects. This is followed by a notation as to which of these traits might be discerned in the archeology. Finally, the significance of the environment in the formation and stabilization of this type of cultural adjustment is discussed. The evidence that environment has played an important part in producing the Tropical Forest Pattern justifies the rather detailed environmental descriptions that introduce each geographical section.

The historical information, including location and description of the tribes at the mouth of the Amazon in the early postcontact period, has been placed after the archeological evidence for two reasons: (1) In this position it follows the general chronological order of the report, which is from early to late, and (2) it supplements the archeological remains but in turn is subject to verification or evaluation in terms of the archeological picture. This section includes the chronology of conquest and settlement, the information recorded about the aboriginal cultures, and an analysis of the amount of correspondence between this and the evidence from archeology.

Since this is the first report of survey and excavation in the Tropical Forest area of South America, it has been necessary to describe in detail all of the sites and the cultural remains as a basis for future work. We have tried to reduce repetition to a minimum and to keep the detailed descriptions separate from the interpretations that are derived from them. This makes it possible, we hope, for any reader interested only in the major conclusions to satisfy himself with as much or as little specific information as he desires. Such a person can begin with the chapter on "Implications of the Cultural Sequence at the Mouth of the Amazon" and if he desires documentation he can turn to the conclusions and interpretations at the end of each of the geographical sections. If his interest is sufficiently stimulated, he can pursue the facts as far as he wishes. It must be emphasized, however, that the critic cannot fairly attack any theories or interpretations given in these chapters without delving deeper into the report and examining the supporting data on which they are based.

The only term in the report that warrants some explanation is our use of "Phase" when referring to our various archeological complexes. Phase has been used to designate distinct archeological cultures with a definite geographical distribution and persistence through time. Although this parallels, in a general way, the modified terminology of the Midwestern Taxonomic System (Cole and Deuel, 1937), it is not an attempt to introduce this system to the Amazon region, where the archeological situation is not sufficiently well known as yet to warrant its use. The term "Phase" was selected instead of tribe, group, culture, complex, etc., because it carries absolutely no ethnological connotation. At present there is no way of determining whether each of the archeological Phases corresponds to one tribe or several, or whether two Phases correspond to a single tribe.[2]

In addition to limiting the cultural reconstruction, the conditions of preservation in the tropical forest place difficulties in the way of arriving at temporal evaluations. Unfortunately, insufficient uncontaminated charcoal was found to make Carbon 14 techniques applicable. In an attempt to compensate for this, we have tried to establish a time sequence by developing formulas for calculating the rate of refuse accumulation in the archeological village sites (pp. 245 ff.). The results are admittedly tentative and before the system can be considered reliable there will have to be further check of the formulas in other South American Tropical Forest situations and particularly in ethnographic village sites.

A few words should be said about the pottery type descriptions. We have not considered all the variations in the ceramic complex of a Phase as independent. Instead, we have recognized the plain wares as primary and the decorated types as the result of applying ornamentation to the surface of a minor proportion of one or more of the plain wares. This approach is revealed in the pottery type descriptions by the absence of complete details on paste, temper, texture, and surface treatment under each of the decorated types; instead, the reader is referred to the plain ware or wares on which the decoration was placed for these details. For example, Anauerapucú Incised designs always occur on Mazagão Plain paste. Since the details of paste and surface are the same in both these types, they are given in the plain type description only. This procedure was followed in the interest of emphasizing the interrelationships between the pottery types within a Phase. In the Marajoara Phase, a tabulation of the decorated sherds according to the plain ware on which the decoration was placed permitted the use of small, selected samples for seriation and made it possible to secure a relative date on sites that would be undatable otherwise (pp. 386–388).

In naming the pottery types, a consistent method was followed, which deviates from that used in some other areas. The first term is a proper noun, either the name of a major site of the Phase or of some geographical feature or landmark in the region of distribution of the sites belonging to that Phase. The second word is descriptive and distinguishes decorated from undecorated surfaces. An undecorated surface is described as "plain," rather than as "orange," "white," "brown," or "gray" as is sometimes done. The use of a color term signifies a slip or paint, as in the case of "Carmelo Red," "Ararí Red Excised," and "Anajás White Incised" of the Marajoara Phase.

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[2] In an article that appeared as this report was submitted for publication, Phillips and Willey (1953) recommend the use of the term "phase" in this manner.

Occasional applique, modeling, or punctation has not been singled out for separate consideration as a decorated pottery type in any of the archeological Phases at the mouth of the Amazon because the occurrence is too restricted or sporadic to be of temporal or cultural significance. Applique reaches an appreciable frequency only in the Aruã Phase, but the fluctuation from site to site makes it of no value for seriation (see fig. 201). Although change in frequency through time was not the only criterion used in deciding whether or not a variant in the ceramic complex should be emphasized by making it a pottery type, this was an important consideration in doubtful cases. When a separate pottery type did not seem warranted, such specimens were described either as "Unclassified Decorated" or as occasional ornamentation of the plain ware.

The observant reader of the pottery type descriptions will notice a slight variation in the format of the vessel shape descriptions. This is the result of a friendly disagreement between the authors as to the most useful method of presenting the information and not of editorial oversight. The same reader will note that the drawings of the rim profiles have been rendered solid black for plain wares and in outline for decorated types to make them distinguishable at a glance.

Each site is designated by a key letter and a number, in addition to the local name. The letter indicates the geographical region in which the site is located (A—Territory of Amapá; C—Caviana; J—Marajó, formerly called Joanes; and M—Mexiana) and the number, the particular site. This system, which permits the addition of future sites in each area, has been followed in other parts of the New World. It is especially convenient for designating sites in foreign countries where the local names are often difficult for Americans to pronounce, much less remember.

Throughout this report the authors have kept in mind that the acquisition of archeological data has one main purpose: to reconstruct the cultures of the past and their interrelations through history. For this reason, we have attempted to revitalize the dead fragments of the cultures we have found and to resurrect some semblance of their former, living condition. Some of our more conservative colleagues may object to our efforts to reconstruct the social organization, the evolutionary development or decline of certain cultures, or to see the various archeological Phases as expressions of different cultures adapting themselves in various ways to a tropical forest situation, but it is our sincere hope that these interpretations will not only make the report more useful to anthropologists as a whole, but will demonstrate that archeologists can do more than just accumulate bushels of potsherds.

TROPICAL FOREST CULTURE

ETHNOGRAPHIC DEFINITION OF TROPICAL FOREST CULTURE[3]

To be in a position to evaluate properly the interpretations and conclusions reached about the archeological cultures of the mouth of the Amazon, it is necessary for the reader to be familiar with the evidence on which they are based. This includes not only the archeological material but also the ethnographical details that are characteristic of the Tropical Forest Pattern, since these constitute one of the bases for the recognition of the Marajoara Phase as something unusual and distinct from the general uniformity of sequence from past to present.

Since the Amazon forest has held similar potentialities and limitations for human adaptation as long as man has been a resident of the South American Continent, a basic general consistency of culture through time might be expected. Another reason for this belief is the uniformity in general features that is characteristic of cultures in the Tropical Forest today. This similarity results from the necessity for securing a living under similar conditions of food supply, natural resources, and other aspects of the environment that encroach upon men in their daily lives, and the ease with which useful inventions and discoveries may be swept along the innumerable waterways to be incorporated into the cultures of distant tribes. Underlining the dominant role of the environment in channeling the cultural adjustment is the characteristically wide variation between Tropical Forest cultures in traits of no survival significance, such as types of body adornment, methods of disposal of the dead, and observances surrounding birth, puberty, and death.

Tropical Forest culture, as distinguished in the Handbook of South American Indians (Steward, editor, 1946–50), is both a cultural area and a level of cultural development. In the former capacity, it is a cultural complex based on "the cultivation of tropical root crops, especially bitter manioc; effective river craft; the use of hammocks as beds; and the manufacture of pottery" (Lowie, 1948, p. 1), which occupies the immense Amazon drainage bounded on the north by the Orinoco and its tributary the Guaviare, on the west by the Andean highlands, on the south by the Chaco and on the east by the Matto

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[3] Throughout this section, unless otherwise noted, the data presented are taken from the various articles in The Handbook of South American Indians, Volume 3: The Tropical Forest Tribes (Steward, editor, 1946–50).

Grosso uplands and the Atlantic Ocean. A smaller concentration occurs in a strip along the Atlantic coast, south to the present boundary of Uruguay and inland as far as riverine and tropical forest conditions exist (see Steward, 1946–50, vol. 3, map 1).

As a level of cultural development, Tropical Forest culture is intermediate between the Marginals, nomadic hunters and gatherers of wild foods, and the class-divided, occupationally specialized Circum-Caribbean and Andean peoples living by permanently productive agriculture. Less efficient Tropical Forest agriculture makes possible a semisedentary type of life, with concomitant possibilities for amassing material possessions, but is not profitable enough to remove the necessity for constant exploitation of the wild resources of the forest and the streams, or to permit the concentration of population and the occupational division of labor prerequisite to the development of a more formalized system of social and political control. The result is that, whereas the Tropical Forest Pattern verges toward the Circum-Caribbean in its material cultural inventory, it more closely resembles the Marginal Pattern in its social organization and religious development.

Because archeological remains are slim, an understanding of the present cultural pattern is helpful as a guide to achieving the fullest interpretation of the clues from the past and to visualizing the range of adjustment probably characteristic in prehistoric as well as in historic times. In the brief description that follows, settlement pattern will be given more emphasis than usual because it is one of the few aspects of culture that can be described almost as fully for extinct as for living cultures.

Agriculture.—A variety of plants is cultivated by living tribes in the Tropical Forest area, with some regional variation and other recent modifications brought about by the introduction of Old World crops like bananas and sugarcane. Of primary aboriginal significance were the root crops, with bitter and sweet manioc as staples and the sweetpotato, cara, and arrowroot also widely grown. Beans were raised in the western part of the area, but seem not to have been introduced into the Guianas until post-European times. Maize was everywhere of secondary importance. Palms and fruit trees, sometimes planted but more often exploited in the wild, include papaya, guava, *ingá*, *genipapo*, avocado, *castanha* (Brazil nut), *cupuassú*, *guaraná*, *manga*, *assaí*, and other palms. Tobacco, calabashes, and *urucú* (for dye) were among the nonfood crops.

Fields were located in the vicinity of the settlement or scattered in the surrounding forest where conditions of soil and drainage were suitable. Size is variable: a Yuracare field was 10 by 500 meters (Métraux, 1948 c, p. 487), an Amanayé field, 912 by 1,188 meters

(Nimuendajú and Métraux, 1948, p. 200). The Tacanan clearings average 50 by 20 meters (Métraux, 1948b, p. 381), and those in the Guianas about 4,025 to 8,050 square meters (Gillin, 1948, p. 825). Before the introduction of iron axes, trees were cut by alternately charring the trunk with fire and cutting away the burned wood with stone axes. The Mojo either waited for a strong wind to topple the girdled trees or selected for felling those whose fall would carry adjacent ones with them. After drying, the brush was burned and the crops planted between the charred stumps and unconsumed trunks. Clearing a new field was often a collective undertaking, in which the owner rewarded his helpers with a feast on its completion.

Because of rapid soil exhaustion, new fields were constantly being cut in the Guianas and were required everywhere each 2 to 3 years at the most. Tapirapé fields were planted for 2 years, the second-year crop confined to manioc (Wagley and Galvão, 1948, p. 168). The Cubeo situation is typical:

> The periodic exhaustion of the soil by manioc produces a seminomadic tribal life. But mobility is limited not only by tribal boundaries but by the necessity of maintaining contact with the gardens nearing exhaustion. To avoid abrupt transitions, the Indians select a new site not too far from the old one and begin to plant it many months before moving. They continue to harvest the abandoned gardens until the entire new crop has reached maturity 8 months to a year later. Abandoned fields are reputedly not replanted, although their owners may continue to harvest the fruit trees for a considerable time. Presumably according to its quality, the soil is exhausted in 3 to 5 years. [Goldman, 1948, p. 770.]

The yield of a typical garden may be judged by the fact that a Cubeo field of about an acre produces approximately 5 tons of manioc a year. This is harvested at an average rate of 25 pounds a day and converted into flat cakes, one of which lasts an adult 2 days if supplemented with other food. Manioc gardening and the preparation of the plant for eating consume 75 percent of a woman's time (ibid.).

Hunting.—The variety of bird and animal life made hunting important, but the paucity of large land mammals made it more time-consuming than in forested areas in other parts of the world. Blowguns with poisoned darts, spears, and bows and arrows tipped with bamboo, hardwood, bone, or sting ray barbs were the major weapons, but traps, nets, and deception were also employed. The Indians of the Guianas, a typical example,

> manifest virtually all the tricks adaptable to their fauna. They imitate the call of the tapir, deer, monkeys, and birds to allay their suspicions; stalk deer; fire the savanna grass and encircle large game in communal drives; dig out armadillos from their burrows; or lie in ambush, screened by a shelter built on the ground or in a tree. [Lowie, 1948, p. 10.]

Fishing.—The Amazon network of rivers and streams provides a constant and plentiful food supply that was thoroughly exploited by the Tropical Forest peoples, as well as by the Marginals. Numerous and varied techniques were used, of which drugging was perhaps the most productive. For this purpose, over 100 species of narcotic plants were used. Spearing, shooting with bow and arrow, and capturing in traps and weirs were also common methods. Not only fish, but turtles, caymans, frogs, manatees, and turtle and cayman eggs were utilized.

Forest products.—The forest was a source not only of food, but of most of the other adjuncts of life. Woods for stools and mortars; fibers for baskets, hammocks, mats and lashings; reeds for arrow shafts; materials for house manufacture, poisons, medicinal plants, oils, and resins were only a few of the products gathered. Often one plant yielded materials for many uses, like the *buriti* palm, which was a kind of "country store" for the Warrau, providing

> leaves for roofing houses, fibers for thread, and rope used to make hammocks, edible pith, materials for sandals from the leaf sheath, conelike fruits regarded as a confection when soaked in water, sap for the manufacture of an alcoholic drink, and the edible larvae of a beetle. [Gillin, 1948, p. 826.]

Settlement pattern.—The riverine environment of the tropical forest presents two basic choices for village location: away from the river or along the shore. Considerations of defense, elevation, and proximity to food sources contribute to the selection of the site. The Carajá, for example, feel that it is preferable to be closer to fishing grounds than to gardens, and build on a high bank overlooking the river. This location is also chosen by the Mura, Apiacá, and tribes in the Uaupés and Montaña regions. Jívaro settlements are on a steep hill at the head of a stream.

Other tribes, who favor the depths of the forest, also do so for reasons of a subsistence nature. Gillin observed this in the case of the Barama River Caribs:

> Successful hunting requires a wide range of virgin forest on all sides, a territory in which the hunters are not handicapped by competition from neighboring villagers or passersby on the river. Furthermore, it is the practice to locate cassava fields on hills or slopes in order to facilitate drainage of the soil. Suitable facilities for natural drainage are most often found at some distance from the river. [Gillin, 1936, p. 31.]

Tribes who shun the river include the Encabello, whose villages are 4 to 9 km. away, the Awishira, 9 to 18 km. away, and tribes of the Upper Xingú, 3 km. away. A nearby creek provides the domestic water supply and a path gives access to the river. Land above flood level is almost universally chosen, but the Omagua often settled on islands, beaches, or lowlands likely to be inundated, and in this respect they are more comparable to the pre-European inhabitants of the Island of Marajó.

Houses were of two fundamental types, communal and single-family, of which the communal type is predominant. It varies from the small structures (about 4 × 10 meters) housing 3 to 8 families, characteristic of the Omagua and Tapirapé, through somewhat larger dwellings of the Aroana (18.2 × 6.1 meters), the Witoto (10 × 20 meters), the Parintintin (20 meters long), and the Jívaro (13 × 26 meters) to the immense structures of the Tupinambá (up to 150 meters long), the Awishira (22.5 × 90 meters), and the Apiacá, which sheltered several hundred people. Details of construction also have a wide range, including circular, rectangular, and elliptical floor plan; conical, gabled or arched roof; thatched or open sides; the interior unpartitioned or divided by mats into family compartments. Individual family houses were characteristic of the Tupí-Cawahíb (3.5–5.5 meters square), tribes of the Guianas and the Montaña, and the Encabello (sometimes occupied by two families). Pile dwellings are built by the Warrau and Tucuna when on inundated sites; otherwise the floor is of packed earth.

Village composition is variable and not coordinated with the nature of the house, except where a single communal house constitutes the village, as is characteristic in the upper Amazon. Otherwise both types may be arranged in a circle around a central plaza, in rows or haphazardly scattered in the clearing. The dimensions of the clearing are rarely recorded, but in one Barama River Carib village of half a dozen houses it measured 206 by 136 feet and was roughly elliptical in outline (Gillin, 1936, p. 101).

In population, the Tropical Forest villages run the gamut from two or three families (Chimane) to more than a thousand individuals (Tupinambá). The majority contain under 200 people, housed in one or more communal houses. The average population for villages with individual family houses is somewhat less.

Village permanency.—Information is scarce on the length of time that villages continue to be occupied, but where this is mentioned it is invariably short. The Tupinambá move when the soil in the vicinity is exhausted or the thatch on the house begins to deteriorate, that is every 4 to 5 years, and the new village is near the old one. Montaña villages move every 2 to 3 years, the Jívaro at least every 6 years, the Cubeo every 3 to 5 years, the Tapirapé every 4 to 5 years. In addition to soil exhaustion, the decimation of game animals or the destruction of nearby palm trees makes a change desirable. Among some groups, abandonment is customary at the death of a member of the household.

Furnishings.—Wherever they are mentioned, floors are described as of packed earth and neatly swept at all times. Furnishings are sparse, but usually include wooden stools, often carved in the shape of an animal, mats and hammocks or platform beds. Personal belongings, weapons, gourd bottles, baskets, etc. are often stored in the rafters.

Dress and ornament.—In aboriginal times the vast majority of the women wore no clothing, and male covering was confined to a penis sheath. Women of some of the Montaña tribes wore a pubic cover of a shell (Zapa) or a leaf (Záparo), and in the Upper Xingú of a miniature straw triangle. On the Jurua-Purus a short, apronlike fringe of cotton was substituted. Depilation of all or part of the body hair was frequently produced with resin or latex. Body painting is widespread, employed particularly on festive occasions. A great variety of ornaments—beads, bracelets, anklets, earrings, labrets, diadems, ligatures—are created from the brilliant and profuse selection of materials made available by nature: wood, human and animal teeth, feathers, bone, shell, stone, beetle wings, fruit shells, seeds, jaguar claws, bird beaks, woven cloth, and bast fibers.

Transportation.—The effective exploitation of the Tropical Forest environment requires dependable watercraft. The rivers are not only the avenues of transportation and communication, but also barriers to be crossed. Canoes are indispensable to many types of fishing. As a result, watercraft is one of the diagnostic traits of Tropical Forest culture. Their greater lightness makes bark canoes most useful in the upper reaches of streams or where rapids make frequent portages necessary. Elsewhere, dugouts are common. The Tupinambá, who manufactured both types, had bark canoes 40 feet long, holding 25 to 30 persons, and dugouts manned by 60 men. Sails appear to have been aboriginally employed along the Guiana coast, but the more usual propulsion was with paddles, supplemented by poling in very shallow water.

Manufactures.—Another diagnostic of Tropical Forest culture is the manufacture of ceramics. These are simple in shape and ornamentation, in accord with their utilitarian function. Calabashes were everywhere important as containers, and were put to many uses elsewhere associated with pottery.

Twilled basketry was widespread and employed for a great many articles in daily use. Among the Guiana Indians, where the art of basketry reached a high degree of proficiency, the products included—

> tubular manioc presses (tipitís), cassava and farinha sifters, fire fans, plated rectangular boxes, wicker pot stands, sitting mats, carrying baskets, handbags, rectangular telescoping two-piece containers for household goods, trays for holding cotton . . . , rectangular and round hanging trays, deep bucket-shaped utility baskets, bottle-necked farinha baskets, fish traps, conical landing baskets for fish, hour-glass-shaped containers, rattles for babies, cover nets for the suspension of pots, knapsack covers, and hollow-woven belts. [Gillin, 1948, p. 839.]

Hammocks and other articles were woven from palm (aeta, tucum or burití) or cotton fibers. The wooden spindle had a whorl of wood, turtle shell, a round wild seed, bone, calabash, clay or a sherd, and was usually discoid, 2.5 to 5.0 cm. in diameter.

Among the typical musical instruments were hollow log drums, gourd rattles, and bark and clay trumpets.

Social and political organization.—A Tropical Forest village is typically composed of one or more kin groups tracing their relationship in the Guianas through the female line, elsewhere patrilineally. When the village consists of a single extended family or sib, local exogamy is observed. Marriage with cross-cousins is often preferred. There is no social stratification and no well-defined leadership. Although a headman is recognized, his main functions consist in organizing fishing and hunting expeditions, supervising on ceremonial occasions, and arbitrating disputes. The advent of foreigners or of war, requiring consolidated action on the part of the group against the outside, however, could put greater authority in his hands (e. g., Apiacá). Polygyny was generally permitted, but common only among chiefs. There was little occupational division of labor within a tribe, except along sex lines, but certain tribes made products of recognized superiority that were sought in trade. The only person who possessed knowledge of an exclusive nature was the shaman, who was not a full-time specialist. He treated the sick by blowing and sucking the affected area, washing in herbal decoctions, and sweat baths, and also foretold the future.

Life cycle.—Food taboos are often observed during pregnancy, especially by the mother. After birth, which usually takes place in seclusion, the couvade is widely practiced, though with various degrees of duration and intensity. At puberty both sexes frequently undergo ordeals in which flagellation, scarification, and exposure to biting ants are common components. In the Guianas, this ordeal was a prerequisite for marriage.

In contrast to the relative uniformity of other aspects of Tropical Forest culture, the methods of disposal of the dead are numerous, widely variant, and with no apparent correlation to geographical or linguistic and therefore presumably historical unity. The body is often buried beneath the floor of the dwelling along with ornaments and utensils, after which the building may be abandoned temporarily or permanently or not at all. Among the Mundurucú a male of high status is exhumed after the flesh has decayed, cremated, and the ashes are buried in a jar. The Tupinambá wrap the body in a hammock and squeeze it into a large jar, which they bury in the house floor or in the open, building a fire in the vicinity to keep evil spirits away. A Mura was buried with his possessions wherever he happened to die. The Omagua disinterred the body 3 months after burial, washed and painted the skeleton, and set it adrift in a vase. The Carajá exhumed the body the next season and placed the remains in an urn, which was not reburied. Cremation was less common, but practiced by Rucuyen and Atorai, the former keeping the ashes in a jar, the latter burying them. The Guaharibo "burn the bodies of their dead, collect the calcinated bones, and pound them in a mortar, and keep them in their houses in globular baskets of closely woven mamuri. When they move their residence or travel, they carry with them the bones of their ancestors" (Spruce, 1908, quoted by Métraux, 1948 e, p. 864). Other groups, among them the Tapajó, cremated the corpse or the exhumed bones and mixed the ashes with a beverage, which they drank.

CULTURE TRAITS DISCERNIBLE ARCHEOLOGICALLY

One of the most striking features of the Tropical Forest Pattern of culture is the extent to which the material culture is composed of traits of a perishable nature. This, coupled with the warm and humid environment, makes it almost intangible from an archeological point of view. Of the busy village, with its large, thatched houses, the variety of household utensils, the array of manufactured items, and the gaudy feather headdresses and other ornaments, all that remains is a scattering of potsherds, a few chips from cassava board graters, and perhaps a few stone axes. The cemeteries that provide information in other parts of the world are often absent, meaning that burial could have been by any of the varied methods practiced in the region today, few of which would leave any trace even if the spot could be found. A few traits can be deduced, but of those listed as basic diagnostics of the Tropical Forest Pattern—agriculture, watercraft, hammocks, and pottery—pottery alone remains to the archeologist.

Pottery, then, is the key to more than the unraveling of the archeological sequence. It is the only link that exists between the archeological past and the ethnographic present. If we are to trace the Tropical Forest Pattern of culture backward through time, it has to be done through the medium of pottery. For this to be done adequately and accurately, it is necessary to understand the functional associations that pottery has, not only in terms of its method of manufacture and its use, but also in the broader perspective of its significance as indicative of the subsistence level and sociopolitical attainments of the culture. Such an understanding can only be reached by a study of the living cultures of the Tropical Forest Pattern. This approach is, of course, not essential if the main goal is to reconstruct the prehistoric sequence in a limited area. Archeologists should not be content with this, however. For their data to be of any value to others than themselves, they must make it possible to trace types of culture and not just types of pottery backward through time. Since most fieldworkers do not publish all the details in their notes, they are the only ones in a position to know and evaluate all the facts. It is up to them therefore to make the cultural reconstructions that can be used by others in the analysis and interpretation of cultural problems of wider significance. In this report, an effort is made to practice what we are preaching and to deduce the absent from the present so as to restore the dead cultures as much as possible to their living condition.

The first step in making such a restoration is to establish a common denominator between the ethnographic and archeological horizons. The characterization of the extinct cultures begins with the material evidence in the form of pottery and the extent and composition of the site. These data can be compared with similar information from living cultures, and when the correspondence is good it can be assumed with considerable reliability that the sociopolitical, religious, and perishable material aspects of the culture will also be comparable in general features. On the basis of this kind of analysis, all but one of the archeological Phases found on the Islands of Marajó, Mexiana, and Caviana and in the Territory of Amapá can be identified as belonging to the Tropical Forest Pattern of culture. They represent semisedentary agriculturalists living in small communities, possessing the major technologies (except metallurgy) and a social organization characterized by lack of differentiation whether in occupation, wealth, or social position. Only the Marajoara Phase exhibits more advanced characteristics.

There are questions raised by the archeology that cannot be answered by existing ethnographic data. In a functioning culture, the small details of daily living that emerge as significant in archeological sites escape notice in the multitude of subsistence, technological, sociopolitical, religious, recreational, and psychological patterns that the ethnographer must record. There is a distinction in density and distribution of sherd refuse that suggests differences in house type and village pattern, but little or no information on refuse accumulation is available from living groups for comparison, and the rapid decomposition prevents the formation of post molds that would reveal size and shape of the houses. Knowing how many vessels are made and broken by a family during a measured period of time would aid in estimating the population of a village or the length of time it was in use. Even an indication of how broken pottery is disposed of might prove or refute what has been suggested as a possible interpretation in this report (pp. 245 ff.). What is the area of a village? How much refuse has accumulated in the period of its habitation? Having no data with which to answer these and similar questions, the archeologist is forced to resort to logic to make interpretations from his meager data. Only the eventual help of the ethnographers will place these postulations on a firmer scientific basis.

ENVIRONMENTAL LIMITATIONS ON CULTURE IN THE TROPICAL FOREST

We are familiar with the pattern of culture characteristic of the living tribes of the lowland tropical forest, and have noted some of the ways in which this type of culture is an adaptation to the environment in which it exists. In the present report, it will be shown that 7 of the 8 archeological Phases identified on Mexiana, Caviana, and Marajó Islands and in the Territory of Amapá fall within the Tropical Forest Pattern. They differ from one another in details of pottery type and decoration, in village size and composition, and in burial customs, but all of these variations come within the range exhibited among living Tropical Forest tribes.

The sites and ceramics of the eighth culture, the Marajoara Phase, are so outstanding that they previously completely overshadowed the less spectacular remains of the earlier archeological horizons on Marajó Island. Their exploitation is so obviously profitable, even in the eyes of the *caboclos*, that it is only with difficulty and persistence that one is able to secure information on Ananatuba, Mangueiras, and Formiga Phase sites within the limits of the Marajoara Phase area of distribution. The high degree of technical and artistic competence attained by the Marajoara Phase ceramicists caused early writers to suggest that the makers must have been descended from, or at least have had contact with, Egyptian or Oriental civilizations (e. g., Lisle du Dreneuc, 1889, p. 19). This evaluation cannot be given scientific credence today, but the observation on which it is based, namely, that Marajoara Phase culture is considerably more highly developed than other living or extinct cultures in the area, receives the support of modern archeological investigation. The quality and standardization of the ceramics, the differential elaborateness of the burials, and the large earthworks are material indications of a level of social and political organization more comparable to that of Circum-Caribbean and Andean cultures than to Tropical Forest tribal society.

The appearance of this advanced culture on Marajó Island in the midst of a succession of simpler ones throws the contrast between the two levels of development into high relief and raises questions that otherwise might not come to the attention of the archeologist. Why, for example, did none of the other archeological cultures attain, or even begin to reach such a high level of development? Why did the Marajoara Phase undergo a cultural decline on Marajó Island? Could it have originated elsewhere in the Tropical Forest Area?

Seeking answers to these questions requires a study of anthropological theory. Analysis of the forces contributing to the evolution of culture elsewhere has shown that agriculture exercises a dominant role (White, 1949; Childe, 1951). Wherever it has been introduced, there is an almost immediate and revolutionary change in the culture; where it has not penetrated, the culture never advances (except in special situations) beyond a nomadic hunting and gathering level, with undifferentiated social organization and simple technology. Agriculture is not a simple "open sesame" to the unlimited vistas of civilization, however. Its effectiveness as a subsistence base depends on two factors: the potentiality of the environment and the agricultural technology of the culture. The variant combinations of these extant in the world explain and in some cases determine the differences in level of development that can be described (Meggers, 1954).

The principle behind this conclusion can be summarized briefly. A food-gathering type of economy is undependable and time consuming. The return per man-hour of labor expended is small and sufficient only to satisfy immediate needs. The supply of roots, fruits, and seeds is seasonal, and game is unconcentrated. In order to maintain an adequate food supply, constant activity is required by all the able-bodied members of the community, which is limited to a small group typically composed of kin. This type of cultural adjustment, characterized by a minimum of material goods and a minimum of sociopolitical organization, was universal over the world until the commencement of the Neolithic, which is marked by the introduction of domesticated plants and animals. It has survived until the present in scattered environments where agriculture cannot be introduced.

The adoption of agriculture as the basic food source meant that man was able for the first time to devote a good part of his time and attention to other things than the securing of food. As a result, the introduction of agriculture everywhere transformed the typically nomadic life of hunters and gatherers with remarkable rapidity into a new pattern characterized by settled villages and by the acquisition of the ceramic and textile arts. This initial revolution brought little alteration in the social organization—no strong chiefs, social classes, occupational specialization—or in religious concepts or practices. These advances came later and depended upon the increasing productivity of agriculture; in other words, on the deflection of larger amounts of time and effort from food production to be expended instead on culture building.

Where the techniques are absent or the environment prohibits their use and agriculture does not increase in productivity, the culture is arrested temporarily or permanently after the consummation of the first stage of advance. In temperate regions like Europe and

North America, the fertility of the soil can be permanently maintained and the yield often increased by scientific crop rotation, fertilization, and similar means. In desert regions like Coastal Peru or in fertile river valleys like that of the Nile, the soil is almost unlimited in its ability to produce abundant crops year after year, which selective plant breeding can augment. But there is no evidence from geographers, soil experts, agronomists, or botanists that such a thing is possible where tropical forest conditions require slash-and-burn agricultural exploitation, and anthropological data add confirmation. No culture deriving its subsistence from slash-and-burn agriculture is able to maintain any of the traits of advanced agricultural societies, such as well-developed leadership, class distinction, occupational specialization, priests, temples or high gods, large and permanent cities and towns, and empires. There are only small, scattered and semipermanent villages and a relatively simple development of some of the basic technologies, like ceramics, textiles, woodworking and basketry.[4]

Much speculation has surrounded the promising potentialities of the American Tropics as the garden spot of the world. Observers of the densely populated areas in equatorial Asia have been led to view the Amazon drainage as equally capable of intense exploitation, lacking only in sufficient advertising. Anthropologists, seeing that the Amazon lagged behind tropical regions nearly everywhere else in the world in the level of cultural development, have been inclined to invoke the late start of the American Indians compared with cultures in the Old World, the constant state of hostility and warfare between the Amazon tribes, or simply to leave the question unanswered.

There is abundant evidence, both from geographers and ethnologists, however, that the limited productivity of slash-and-burn agriculture is the true cause. Robert Pendleton (1950, p. 115), a leading authority on tropical land use, has recently put the situation in decisive language:

> In higher latitudes, and particularly in the United States, a widespread opinion prevails that such humid regions as the enormous Amazon basin, now occupied by luxuriant and apparently limitless tropical high forests, must certainly have rich soils, and hence, great potentialities for the production of food, fiber, and other agricultural crops. . . . It is true that certain regions such as those with recently active volcanoes, and those recent alluvial soils in humid equatorial lowlands which are not deeply flooded, do have great crop growing potentialities; they are producing and can continue to produce much from the soil. Nevertheless, on the whole, the soils of the humid equatorial regions have distressingly limited possibilities for plant production. . . . This pessimistic attitude is no longer the result of mere opinion, for in a number of widely scattered regions in

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[4] Maya culture, which superficially looks like an exception, exhibits a history of decline very similar to that undergone by the Marajoara Phase (Meggers, 1954).

the humid low latitudes agricultural scientists have been and still are seriously at work.

The reason for this seeming contradiction in plant productivity is in the differential ability of the crops to utilize the resources of the soil:

> The reason for the rapid decline in productivity is that practically all of the plant nutrients within reach of the roots of the forest trees have been taken up and are in the growing trees. Almost all the plant offal (dead leaves, twigs, fruit, fallen trees, etc.) which falls to the ground is quickly attacked by termites and decay organisms; as a consequence it rapidly disappears. Organic matter cannot persist long on the soil; leaf mold as it is known in the north temperate U. S. does not develop. However, the heartwood logs of certain very durable sorts of trees will last a couple of years or more. The nutrients thus released and washed into the soil by the frequent drenching rains are quickly taken up by the tree roots lying in wait just under the soil surface. All the nutrients within reach of the tree roots are in the vegetation, and are being cycled. When the forest is cut and burned the cycle is broken, the plant nutrients being released in soluble form in the ash. The soil itself is extremely acid, often being pH_4. The burning slightly reduces the acidity and supplies available nutrients for the crop plants which may be planted in the clearing. But before the annual or biennial crop plants can develop extensive root systems sufficient to absorb any considerable proportion of these liberated nutrients, most of the soluble materials will have been washed down deep into the subsoil by the almost daily rains—thus quite out of reach of the roots. [op. cit., p. 116.] [5]

The effects of this leaching process are dramatically reflected in differences in yield from the same field in successive years. Wagley (1953, p. 67) reports that the second planting is only about half as productive as that of the first year after clearing. Re-use of the area before it has had sufficient time to return to tall secondary growth results in a less productive harvest than is achieved if the vegetation is allowed to reach this stage before another attempt at cultivation (op. cit., p. 68). Wasteful as it appears to be, slash-and-burn agriculture is the only method of exploitation that is adapted to the major portion of the Amazon area. The adverse conditions of high temperature and humidity, heavy rainfall, and low initial fertility of the soil make short intervals of cultivation separated by long periods of fallow and reforestation the only circumstance under which the long range pursuit of agricultural return is feasible, given the plants available aboriginally.

In addition to the general poverty of the soil for agricultural purposes, there is a further factor that serves to reduce the utility of the land. This is its topography and elevation. Estimates of the possibilities of tropical agriculture often leave this out of consideration and as a result make the picture appear considerably brighter than it actually is. Higbee (1948), for instance, has estimated that the land in a

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[5] Similar conclusions on the poverty of tropical forest agricultural resources have been reached by Stamp (1952, pp. 61–63) and Richards (1952, pp. 401–403).

60-mile radius around the Maya site of Tikal could feed 500,000 people. This calculation is based on the observation that the production from 1 acre of land will feed 1 person for 2 years. After clearing, 30 years of fallow are required for the return of fertility, before reclearing is profitable. Under these conditions, an allotment of 15 acres per person would insure a permanent food supply. Division of the area within a 60-mile radius of Tikal into 15-acre plots gives Higbee his estimated population of 500,000. However, this method of calculating subsistence potential fails to make allowances for irregularities in the terrain. To be usable for agriculture, the land must be above flood level and have a minimum of slope. In a region where rivers rise from 10 to 20 or more feet in the rainy season, a substantial part of the land is submerged for several months each year. Hills often have steep banks and summits too small for a field. Our own estimate of agriculturally usable land in British Guiana, Brazilian Guiana (Territory of Amapá), and on the Islands of Mexiana, Caviana, and Marajó, is that it constitutes about one twenty-fifth of the total dry season extent. Since this is based on traveling over the countryside and along the rivers rather than on a specific survey, and in order to avoid an error on the conservative side, we increased this figure 2½ times, bringing it to 10 percent of the total land area.

Tropical areas with more favorable conditions for agriculture exist, but Marajó Island is not one of them. On the contrary, its potentiality is rather lower than average. The forested western part, poorly drained even during the dry months, is inundated during the rainy season. The *campo* dominating the eastern half is also hostile to agriculture. Unlike the fertile plains of temperate regions, the tropical grasslands are even lower in agricultural potential than the forests. It is only with extensive preparation of the soil with fertilizer and by careful nurturing that the modern ranchers succeed in bringing a rare fruit tree to maturity (Lage, 1944, pp. 244–245; Pendleton, 1950, pp. 119–120). Only in the limited area along the southeastern coast can the conditions be said to be at all favorable to cultivation (pl. 27, *b*.) Productivity can be judged on the basis of efforts to establish agricultural colonies on the opposite side of the Baia de Marajó, where the land is part of the same formation as on the Island:

> The peasants who pioneered here soon found that while they could get a good crop of food the first year after cutting and burning the primeval forest and could get a following crop or two of mandioca, no further cropping was worthwhile for them, even though very little labor was needed to cut down and clear the second growth that came in after they abandoned their 2 or 3 years' cultivation of crops in the new clearing. [Pendleton, 1950, p. 116.]

The inescapable effects of reliance on slash-and-burn agriculture have been recorded repeatedly by ethnographers: "The periodic exhaustion of the soil by manioc produces a seminomadic tribal life" among the Cubeo (Goldman, 1948, p. 770); "The Jívaro community is . . . moved at least every 6 years as new farm land is needed" (Steward and Métraux, 1948, p. 621), etc. The pattern of "shifting cultivation" requires that the rest of the culture remain simple enough to retain its mobility, to be capable of ready transferral from place to place, or become extinct as local food resources give out.[6]

Examples of the degeneration or extinction of cultures that had become adjusted to permanently productive agriculture and were attracted or pushed into the tropical forest are also abundant. Johnson (1948 b, p. 196) summarizes the Central American situation:

> The few colonies which the Meso-Americans sent into the Tropical Forest were mere outposts, some of which succumbed to the environment, while others, probably under environmental influence, adopted the indigenous culture. The colonies which retained their Meso-American features were evidently not established long enough before the Conquest for local environmental and cultural influences to have changed them. [Cf. Steward, 1949 c, pp. 759–760.]

Students of the Andean cultures have commented that even the remarkably organized Inca system was unable to surmount the limitations of the lowland tropics. Stirling notes that "archeological sites . . . in the valleys of the Upano and Namangosa Rivers demonstrate that the material culture of the Jivaros in pre-Columbian times resembled that of the ancient cultures of the highlands much more closely than do present-day survivals" (1938, p. xi; also Steward, 1948 a, pp. 13–14).

This process of deculturation can be observed in progress in the changes that occurred in the culture of the Marajoara Phase during its habitation of Marajó Island. In this instance we have as complete possession of the facts as we are likely to have for the assessment of the causes of this decline. We have comparative material in the form of four other cultures of the Tropical Forest Pattern that occupied the same area at different times. These form a sharp contrast to the Marajoara Phase and emphasize its more advanced character, which can be paralleled only by cultures of the Circum-Caribbean and Sub-Andean levels of development. We have a detailed knowledge of the environment today, and the high probability that in the short time represented by the archeological sequence there was no notable ecological alteration. All of this evidence makes as clear a case as possible for the conclusion that this environment cannot support a culture more advanced than the Tropical Forest Pattern.

If this is true, then the Tropical Forest Pattern represents the maximum development of culture that could have been attained in the area where agricultural exploitation is limited to slash-and-burn. This limitation is first and foremost an environmental one, which operates in terms of restricting the subsistence resources, both in quantity and permanence. Some variation exists within the region, and this is correlated with larger or smaller communities, ranging from two or three families to a thousand or more individuals (Tupinambá). The upper limits of this range, however, resemble culturally the lower limits more closely than they do members of the more advanced Circum-Caribbean and Andean Areas. The cultural development of the Tropical Forest Area cannot be said to have been "arrested" by the advent of the Europeans as it might have been in other parts of the New World; it had already been arrested by the agricultural deficiencies of the environment in which it existed.

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[6] For another discussion of the interrelationship between culture and agricultural potential, see Linton, 1940.

An understanding of this situation permits a more realistic interpretation and evaluation of the past and present cultures at the mouth of the Amazon than would otherwise be possible. The similarities between the archeological Phases and their comparability to living Tropical Forest cultures become the expected components of a total pattern of adaptation to and limitation by a particular type of environment. The deculturation suffered by the Marajoara Phase and its lack of influence on tribes in the nearby area become understandable and explainable. Knowing the limitations of the tropical forest for the development of culture makes it possible to conclude that some other part of the South American continent with greater subsistence potential must hold the key to the origin of the Marajoara Phase, and this clue can be pursued and verified by use of the comparative method (pp. 412–418).

That the ecological situation in the Tropical Forest Area can be so sharply defined is a fortunate and unusual circumstance. In most other types of environment, the limitations and possibilities for cultural development are less readily delimited, and differences in technological achievement, especially in the realm of agriculture, can play an important role in determining the productivity of the subsistence and through it the level to which the culture can attain. Hence the approach employed here may not turn out to be particularly useful to archeologists working in other parts of the New World. This does not argue against making fullest use of it in the tropical forest, where the data recovered by archeology are so meager that all conceivable methods of analysis and interpretation must be explored.

THE TERRITORY OF AMAPÁ

GEOGRAPHICAL DESCRIPTION

The Federal Territory of Amapá was created in May 1944 in the area commonly known as Brazilian Guiana (fig. 1). The Rio Oiapoque separates it from French Guiana on the north and the Tumuc-Humac Range, extending westward from the headwaters of the Rio Oiapoque, is on the boundary with Dutch Guiana. The western and southern limits follow the meandering Rio Jarí from its headwaters near the Serra Tumuc-Humac to its mouth, which opens into the lower Amazon just opposite the Ilha Grande de Gurupá. The mouth of the north channel of the Amazon (Rich, 1942, pl. 25) and the Atlantic Ocean combine to form the eastern boundary. This vast equatorial region extends from 49°52′ to 54°50′ West Longitude and from 4°25′ North Latitude at the mouth of the Rio Oiapoque to 1°20′ South Latitude at the mouth of the Rio Jarí. The area of 137,419 km.^{2} given in the most recent Territorial report, is an approximation based upon aerial photographs and incomplete ground surveys (Moreira, 1948, p. 1; Reis, 1949, pp. 7–11; World Aeronautical Charts, 895, 946).

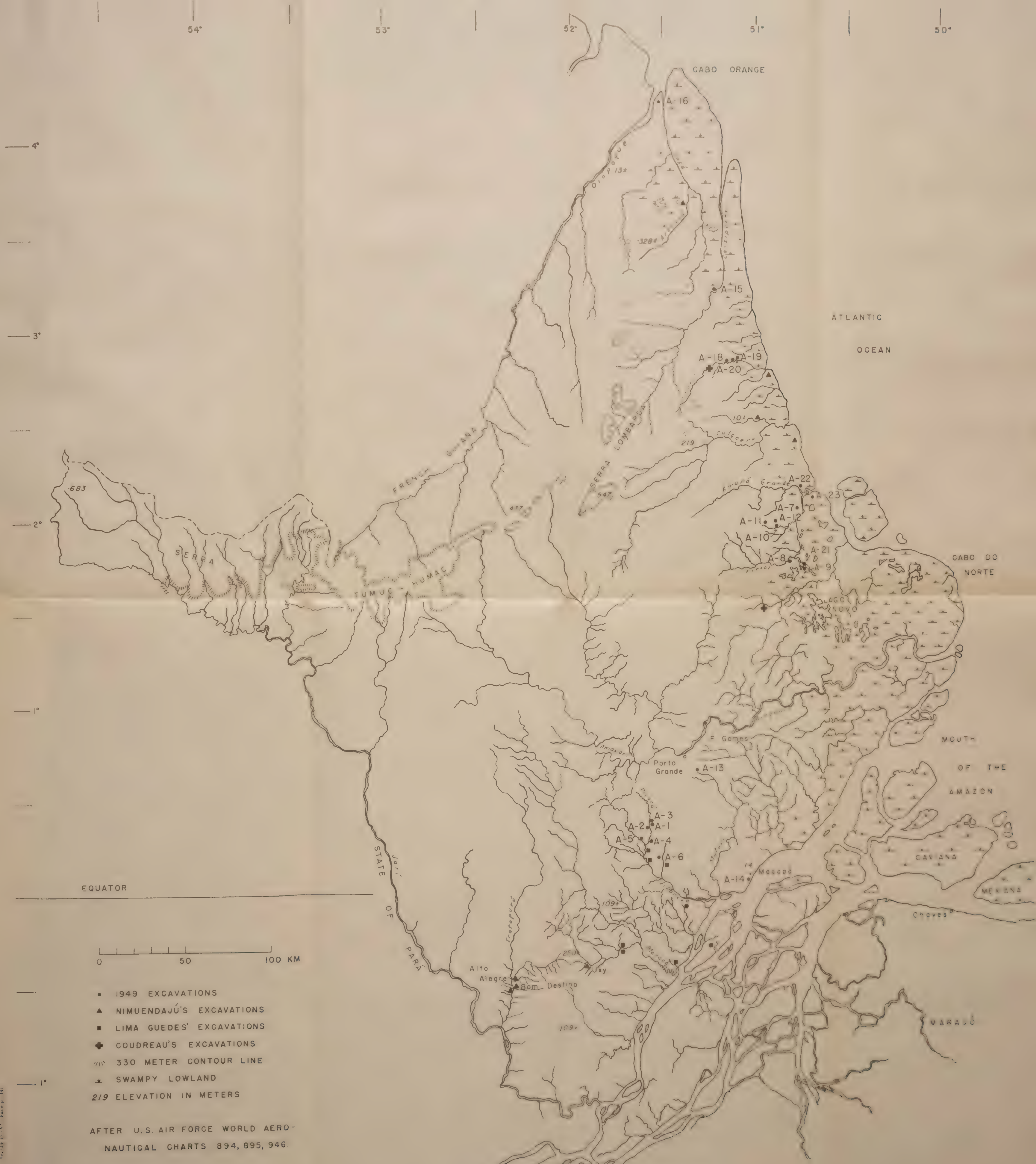
The muddy waters of the Amazon discolor the Atlantic Ocean for a distance of 200 miles out from land and, in spite of the strong tide effects and ocean currents, none of the water along the southeastern shore of the Territory of Amapá is contaminated with salt. The coastline is constantly shifting, especially between the Cabo do Norte and the mouth of the Rio Oiapoque. Sand and mud bars running parallel to the coast are backed by a belt of marshy lagoons into which the water penetrates at high tides, and across which the rivers meander to empty into the sea through openings or channels in the bars. This section of the coast is frequently subject to heavy seas, high winds, and strong tides, presenting grave hazards to navigation.

The topographical features of the Territory of Amapá are controlled in part by the fact that the north is composed of the same geological structure of crystalline hilly uplands found in Dutch, British, and French Guiana. This culminates on the western extreme in the Tumuc-Humac Range, which runs for 250 km. in an east-west direction and attains an elevation of 916 meters. This continuous high range of igneous rock forms a line of division between the streams that flow north into the Atlantic (e. g. Rios Oiapoque, Cassiporé) and those that drain south into the Amazon (e. g. Rios Jarí, Maracá). Several lesser mountains outcrop in the northern part of the Territory. The Serra Lombarda is the largest with its highest peak reaching an elevation of 500 meters. Numerous rock shelters and caves are found in the large, eroded, igneous outcrops scattered throughout the Territory, especially in the north.

Geographically, the Territory of Amapá presents a mixture of lowlands flooded during the rainy season, dry grasslands (savanna) with scattered trees, dense rain-forest vegetation, undulating uplands, and small mountains. All the topographical and vegetational features resemble those of the other Guianas. The association of uplands, ranging from between 15 and 100 meters in altitude, and low mountain ranges with flooded lowlands gives the whole area an unusual combination of topographical and vegetational features. Flooded lowlands occur along the coast from the mouth of the Rio Oiapoque to within a few kilometers of the city of Macapá, extending inland in a zone ranging from 10 to 100 km. in width. The most extensive unbroken lowland is the lake region between the mouth of the Rio Araguarí and the city of Amapá. Marshes and hundreds of deep lakes ranging in size from small ponds (pl. 4, *b*) to Lago Novo, which is 40 km. long and 20 km. wide at the lowest water of the dry season, cover more area than the woodlands and rolling grassy meadows. During the rainy season, it is possible to travel by boat from one lake to another across the flooded *campo*; even during the dry season most of the lakes are interconnected by small *igarapés* or streams. The Rio Flexal drains part of the lake region, offering an exit to the coast. Throughout the year these deep lakes are bountiful in fish and harbor a large number of waterfowl.

Such a topography makes the Territory of Amapá relatively inaccessible by land and, now as in the past, the waterways are the main routes of transportation and communication. Although an abundance of rapids (pl. 1, *b*) makes most of the rivers unsuitable for steamers or motorboats, they are navigable in small canoes. The Rio Oiapoque, one of the largest, is unobstructed only as far as the modern town of Clevelandia, 85 km. above the mouth. Passing from here to the headwaters, 270 km. farther in a southwesterly direction, requires portage around or paddling up and over 35 major rapids. The Oiapoque empties into a bay 20 km. wide and 45 km. long, formed by two peninsulas, one on the French Guiana side and the other, Cabo do Orange, on the Brazilian side. The Rio Uaçá, whose headwaters lie in the foothills of the Serra Lombarda, flows from the south into the same bay.

Going from the Rio Oiapoque south to the Cabo do Norte and the Ilha Maracá, four principal rivers—Rios Cassiporé, Cunaní, Calçoene,



54°
53°
52°
51°
50°
4°
3°
2°
1°
1°
CABO ORANGE
A-16
Oiapoque
328±
A-15
ATLANTIC
OCEAN
A-18
A-19
A-20
FRENCH GUIANA
SERRA LOMBARDA
10±
219
Calçoene
683
SERRA
TUMUC - HUMAC
417
547
Amapá Grande
A-22
A-23
A-7
A-12
A-11
A-10
A-21
A-8
A-9
CABO DO
NORTE
LAGO NOVO
MOUTH
OF THE
AMAZON
F. Gomes
Araguari
Porto
Grande
A-13
A-3
A-2
A-1
A-5
A-4
A-6
14
Macapá
A-14
CAVIANA
MEXIANA
Chaves
EQUATOR
STATE OF PARÁ
Jarí
Iratapurú
109±
250±
Uxy
Alto
Alegre
Bom Destino
109±
Maracá
MARAJÓ
0
50
100 KM
• 1949 EXCAVATIONS
▲ NIMUENDAJÚ'S EXCAVATIONS
■ LIMA GUEDES' EXCAVATIONS
✚ COUDREAU'S EXCAVATIONS
330 METER CONTOUR LINE
SWAMPY LOWLAND
219 ELEVATION IN METERS
AFTER U.S. AIR FORCE WORLD AERONAUTICAL CHARTS 894, 895, 946.

features and location of archeological sites

and Amapá Grande—flow into the Atlantic Ocean. The longest and largest of these, the Rio Cassiporé, stretches northward for 300 km. from its source in the Serra Lombarda to the sea. It is obstructed by rapids and falls to such an extent that in early colonial times its headwaters were often reached by ascending the Rio Calçoene and crossing over by a small *igarapé* joining the two rivers to avoid the hardships of portage.

One of the major rivers of the Territory of Amapá, the Rio Araguarí, empties into the Atlantic Ocean just south of the Cabo do Norte and divides the Territory into a northern and southern sector. It has two main forks, the Araguarí proper, which flows due south from the foothills of the Serra Lombarda, and the Amaparí draining from the eastern extreme of the Serra Tumuc-Humac. Although this river is 1 to 3 km. in width along much of its lower course and has a deep channel and swift current, a stretch of rapids and falls between the towns of Ferreira Gomes and Porto Grande and a silted-up mouth has made the lower 150 km. of the river of only secondary importance from the standpoint of modern navigation. The land along the river is subject to flooding during the rainy season, except for occasional high bluffs and rounded hills, but the region is not geographically distinct from or more hostile than other parts of the Territory (pl. 1). However, the low banks may account for its position as an important cultural boundary in aboriginal times.

South of the Rio Araguarí-Amaparí all the rivers and *igarapés* drain into the north channel of the Lower Amazon instead of the Atlantic Ocean. There are no unusual features along the Rios Matapí, Vilanova (formerly Anauerapucú), and Maracá; these drainages are similar to all others in the region with meandering courses, deep channels, greatly affected by tide action toward the mouth, broken by rapids toward the headwaters, crossing lowlands along the coastal fringe and lower reaches and cutting through uplands, higher hills, and mountains in the headwaters. A large number of tributary *igarapés* and rivers form a network of inland waterways for each river drainage.

The longest and most sinuous river of the entire Territory of Amapá is the Rio Jarí, which forms the southwestern boundary. Its course is roughly 800 km. long, with its headwaters and upper branches draining the south side of the Serra Tumuc-Humac, but only the lower 150 km. are free of rapids and falls. This river penetrates the thickest forest of the entire Territory, unbroken by savannas and uplands. The southern part of the Territory consists of undulating uplands with a heavy, equatorial rain-forest vegetation interspersed with occasional grassy savannas dotted with trees (pl. 3, *a*). The coastal fringe along the north bank of the Amazon is higher land, ranging from 5 to 20 meters in elevation and covered with thick, high forest and dense underbrush.

The climatic features must be mentioned briefly. Although the equator passes through the southern part of the Territory, the climate can in no way be called disagreeable. The average monthly temperature ranges from 24° to 28° C. (75.2° to 82.4° F.), giving a mean annual temperature of 26° C. (78.8° F.). The daily range is from a minimum of 20.5° C. (69° F.) at 5:30 a. m. to a maximum of 32.6° C. (91° F.) at 3 p. m. The nights are always cool and agreeable; continuous and strong offshore breezes cool the coastal regions. The relative humidity of the free air during the dry season ranges from 99 percent at the period of minimum temperature to 50 to 60 percent at the time of maximum temperature, rising to 70 to 99 percent during any time of the day during the wet season. Rainfall varies slightly by region but usually fluctuates in 13 to 15 year cycles from an annual rainfall of 203.2 cm. (80 inches) to 342.9 cm. (135 inches), usually with light, scattered daily showers during the dry season from late July to November (Pinto, 1930, pp. 30–42; Le Cointe, 1945, pp. 79–93; U. S. Air Force Meteorological Observations, personal communication).

The popular conception of the Amazonian equatorial "jungle" as dense, monotonous, and impenetrable is not applicable here. The plant growth of the Territory of Amapá varies considerably from high, thick, virgin, equatorial rain-forest vegetation of large broadleafed trees with limited undergrowth, to dense thickets of heavy undergrowth and tangled vines along the banks of all waterways, to sprinkled palms and other trees on the undulating grassy uplands, to the typical marsh and lowland growth of reeds, water lilies, and hyacinths. The variety of trees and shrubs is enormous. Some measured forest areas record up to 3,000 different species per square kilometer. Animal life is less bountiful but includes the paca, agouti, peccary, coati, deer, tapir, jaguar, ocelot, many species of monkeys, etc., in addition to reptiles. Bird life is profuse, but often withdrawn to the high fringes of the tall forest, making it difficult to observe. Without any doubt, the excellent fish found in abundance and in great variety in all streams, rivers, and lakes provided a major source of food in the past, as it does today. In relation to the potential food supply, it is pertinent to mention the inherent sterility of the soil for the support of intensive cultivation. Heavy rains constantly percolating through the upper layers of the soil and dissolving the soluble minerals, plus the vigorous bacterial action under conditions of high temperature and humidity which quickly destroys any organic matter that falls to the ground, rid the soil of vital plant foods and humus.

The natural mineral wealth of the region is today of great economic significance (Ackermann, 1948), but only nugget gold, hematitic iron in a relatively pure state, white chalk, and yellow and red ochre are found in a free or accessible state. With the exception of the ochres and the chalk, none of these minerals appears to have been utilized by the Indians of the region.

The Territory of Amapá is one of the regions of greatest variation of topographical and vegetational features in the Amazon drainage. This combination of flooded lowlands and lakes, undulating uplands, low mountain ranges, savanna and dense forest with a multitude of *igarapés* and rivers in part affected the living habits of the indigenous population but, in all probability, its influence on the first European explorers, who bent their efforts to the control and colonization of the region, was even greater.

THE ARUÃ PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

The only prehistoric cultural Phase in the Territory of Amapá with a distribution on both sides of the Rio Araguarí-Amaparí is the Aruã. Its history on the islands of Marajó, Mexiana, and Caviana provides the sequel to its occupation of this part of the mainland, from which it was apparently expelled by the peoples of the Mazagão and Aristé Phases. The Aruã Phase is of further significance because it is the earliest ceramic-producing cultural Phase in the Territory. Although it is represented by a limited number of excavated sites, these add important information to the Aruã Phase as it is known from the islands. Reference to the sites, designated by their numbers, on the map (fig. 1) while reading the following descriptions will aid considerably in establishing a picture of the geographical distribution of each Phase.

SITE A-5—CAFEZAL

The only habitation site in the Territory of Amapá showing occupation by two distinct cultural Phases is Cafezal, located on the northeast side of the Rio Vilanova about 5 km. above the junction of the Rio Piçacá. The steep-sided, conical hill on which it is located is 25 meters high and separated from the river bank by about 2 km. of low, poorly drained land. The entire region is covered with a dense forest containing an unusually large number of palm trees amid thick underbrush. A small rivulet drains along the foot of the hill and into the Rio Vilanova. The site itself is on the northwest side of the hill 15 meters from the top. Tests in many spots showed that the deposit covered an almost circular area 10 meters in diameter and did not exceed 10 cm. in depth. The potsherds were scattered thickly over the surface and the body of a huge jar was buried in their midst. A trench 2 by 1 meters was excavated near the center of the site to the depth of sterile soil and all specimens were cataloged as a unit. Pottery types belonging to both the Mazagão and the Aruã Phases were found, but there was no stratigraphic separation because (1) the deposit was so shallow that there was natural intermixture and migration of sherd material and (2) the area had been used, recently, as a manioc garden and hence had undergone extreme artificial mixture from cultivation activities.

The large jar in the center of the site was uncovered and found to be decorated with a rib running around the shoulder bearing an irregular row of impressed rings (pl. 101, *b*). The rim was broken off 22 cm. below the present ground surface and just above the ring-impressed design. The vessel measured 78 cm. at its widest diameter, 61 cm. at the broken neck, with the existing fragment 61 cm. high. The flat base was 29 cm. in diameter. Large fragments of the heavy, exteriorly thickened rim found nearby establish the mouth diameter as 36 cm. The body wall was from 1.5 to 2.0 cm. thick and was unevenly smoothed, pitted, and crackled. The decorative rings average 1.1 cm. in diameter and were punched to a depth of 3 to 5 mm. with the end of a hollow cane. Since the contents of the jar had been removed by curious *caboclos*, its function was not ascertainable. In the Aruã Phase on the islands this type of jar was used for secondary burial. Of the 839 sherds cataloged from Cafezal, 230 or 27.5 percent represent the Aruã Phase and the remainder are from the Mazagão Phase. These Aruã sherds classify as 230 (100 percent) Piratuba Plain, 2 of which have punctate decoration.

SITE A–8—AURORA

Site A–8 is a stone alinement on the east shore of the Rio Flexal, which drains part of the lake region north of the Rio Araguarí-Amaparí and south of the city of Amapá. Unfortunately, *caboclos* in search of buried treasure had disarranged the stones so that no idea could be gained of their original positions (fig. 2). They are situated on a rise in the savanna one-quarter kilometer from the river bank between two small lakes, one to the east and another to the northeast. This ground, rising 3.5 meters above the high-water level, is the highest land in the area and commands a magnificent view in all directions over the surrounding high-grass savanna dotted with groves of trees, the winding course of the Rio Flexal, and the lakes. All the stones are biotitic granite with a high percentage of quartz, of which the closest natural outcrop is about 5 km. downstream. At the time of our visit only two stones remained standing and these were leaning badly (pl. 2). One extended 3 meters above ground and was roughly triangular in cross section, with the greatest width 30 cm.; it leaned 45 degrees to the southeast. The other, 6 meters southwest of the first and leaning at an angle of 45 degrees to the northeast, measured 2.10 meters above ground and was roughly triangular with 20 cm. to a side. Eighteen other granite stones, ranging in size from 75 by 30 by 13 cm. to 3.00 by 0.30 by 0.14 meters, were scattered on the surface over an area 11 by 9 meters. All but six were under a meter long, but those six ranged from 1.75 to 3.00 meters in length. All of the rocks were roughly hewn, with no evidence of redressing.

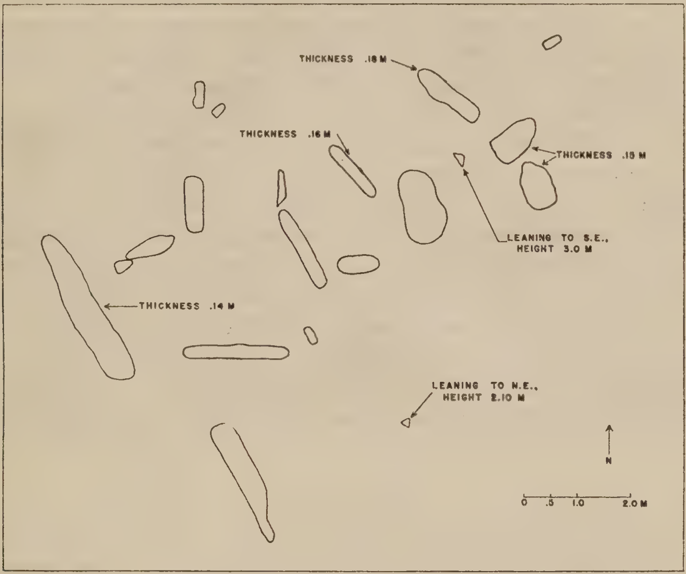


FIGURE 2.—Ground plan of A-8—Aurora, a stone alinement of the Aruã Phase.

The *caboclos* said that no whole vessels had ever been found in their treasure digging and our tests in the area revealed no traces of bone material from burials and no concentration of potsherds or vessels. A few sherds were scattered in the native clay (tan to dark-brown flecked with orange) from the surface to a depth of 5 cm. near one of the standing stones. Only 78 sherds were collected, of which 36 were excellent representatives of the early variety of Piratuba Plain with occasional punctate decoration and 30 were Aberta Incised (pl. 102, *g-k*). The majority of these sherds appear to be from only 2 or 3 vessels. The remaining 12 sherds are ceramic types of the Aristé Phase and also seem to represent only a few vessels (see pp. 106–107). This stone alinement resembles those found by Nimuendajú (see pp.

41–43) in the northern part of the Territory of Amapá in its general characteristics and in the fact that no burials and only a few scattered sherds are associated with it. Its location on a high point in the area with an unobstructed view of both sunrise and sunset, the laborious transportation of stones from a distance of at least 5 km., and their placement in some sort of definite pattern, seem to warrant the conclusion that this site was used as a place of worship or ceremonial gathering.

SITE A–23—ILHA DA FORTALEZA, CONCEIÇÃO

Information on this stone alinement comes from Sr. Newton W. Cardoso, who visited it in March 1949. It is on a point of land between the lower Rio Flexal and the Canal de Carapaporis, which passes between the mainland and the Ilha de Maracá. One and a half kilometers from the coastline are two small hills, one measuring 50 meters long by 25 meters wide and the other, 60 meters west of the first and roughly circular, measuring 35 by 45 meters and 5 meters high. During the rainy season only these two small rises escape flooding. Potsherds and remnants of a stone alinement are found on the second hill only. The *caboclos* could remember when there were a large number of standing stones and many fallen ones arranged roughly in a large circle. Only 6 of these (largest 1.00 × 0.25 × 0.25 meters) remained at the time of Sr. Cardoso's visit (fig. 3), the others having been carried off for modern building purposes. The nearest source of rock that he could ascertain is 10 km. away by dugout. Once again the small elevation commands a perfect view of the surrounding region.

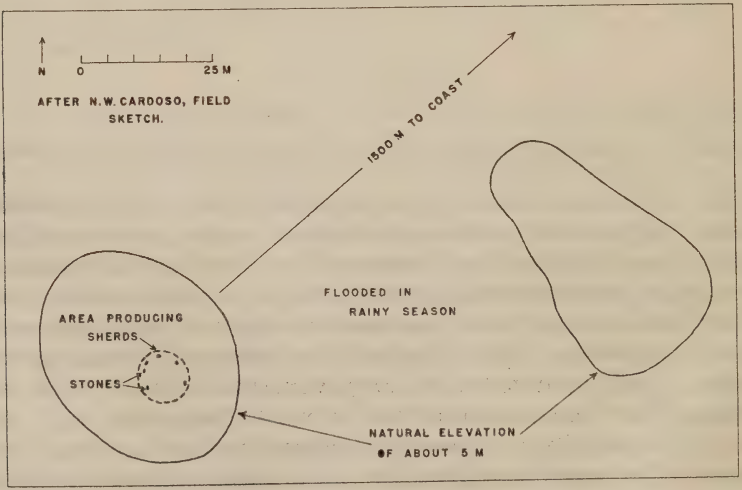


FIGURE 3.—Ground plan of A–23—Ilha da Fortaleza, Conceição, a stone alinement of the Aruã Phase.

Potsherds were distributed sparsely from the surface to a depth of 10 cm. or less in a roughly circular area with no concentration near the stones. Seventy-six sherds were collected from the surface and 288 from subsurface testing. All of the sherds were good, typical, early style Piratuba Plain resembling the type from Cafezal (A–5) and Site M–2 on Mexiana. No bone fragments or whole vessels were found. The fact that the site has a more extensive refuse deposit than is generally associated with these stone structures makes it possible that a small Aruã village was located here prior to the erection of the stone alinement.

DATA FROM OTHER INVESTIGATIONS

Aruã Phase habitation sites, typically small and shallow, appear to have escaped notice by the previous investigators in the Territory of Amapá. In any event, no one thought the pottery types sufficiently interesting to warrant transportation to a museum, even one so accessible as the Museu Goeldi in Belém.

During his archeological explorations in the Territory of Amapá during parts of 1923 and 1925, Nimuendajú encountered numerous stone alinements similar to our Site A–8—Aurora. The brief summary that follows is taken in part from Linné's published accounts (1928 a, 1928 b) but principally from Rydén's (MS.) translation and study of the notes and materials collected by Nimuendajú and deposited at the Ethnographical Museum in Göteborg. Where it was possible to identify the cultural affiliation from a study of the photographs, drawings, or Rydén's descriptions of the artifacts, we have done so.

IGARAPÉ DOS MACACOS

Several granite slabs were on a slight rise of land near the *igarapé* One slab, 1 meter tall and 10 cm. thick ,was vertical with fragments of another scattered nearby. Fragments of a few vessels and several stone axes came from the site.

RIO NOVO

On a small hill about 6 meters from the river bank, there is a stone alinement consisting of three parts: (1) The eastern part composed of a vertical, granite slab 2.45 meters high, 1.15 meters wide and 10 cm. thick, with a smaller pillar leaning against it as support and several fragments scattered over the ground; (2) the central part with a vertical, granite slab and a looted "grave-shaft" nearby, which was covered with a large flat stone; and (3) the western part 20 meters from the central group where five granite slabs (largest one 1.60 meters tall) were placed irregularly over an area of 5 square meters. Except for a large stone ax, no artifacts were found.

Although Nimuendajú did not visit them, he received information that further up the Rio Novo there were several other similar stone alinements.

JOSÉ ANTONIO

One of the largest stone alinements in the Territory of Amapá extends about 100 meters along the Rio Calçoene. (A ground plan and photograph are given in Linné, 1928 b, fig. 4 and pl. I–1.) Large portions have been demolished by treasure hunters and people seeking stones for road paving, house foundations, and anchors, but about 150 stones are still available on the surface. Nimuendajú divides the alinement into three parts, A, B, and C, each apparently distinct from the other. The granite slabs appear originally to have been vertical with smaller stones propping up the bases. Although a few scattered sherds were found around some of the stones there was no concentration; a few complete axes came from the area. Traces of charcoal to a depth of 1 meter were perhaps produced by the original slash-burn clearing of the land. Nimuendajú was impressed by the fact that although this group of stones represented a tremendous amount of work including transporting them from some distance, pottery was exceedingly sparse. The descriptions suggest the pottery is typical Piratuba Plain.

VILLA CALÇOENE

Three vertical stone slabs erected in a triangle are said to have once been standing a short distance from the old Villa Calçoene.

TESO DA MINA

A large stone alinement consisting of a larger and a smaller group was near the Amapá Grande, but an organized party of treasure hunters had so disarranged the numerous granite slabs that their original position was indeterminable. No pottery was found by Nimuendajú.

SUCURIJÚ

Two small alinements on the Rio Sucurijú, a source of the Rio Mayacaré, had been totally destroyed by treasure seekers.

LAGO DOS PATOS

On the Lago dos Patos of the Rio Sucurijú was a recently disturbed alinement of 12 stones. No artifacts were found.

CACHOEIRINHA

South of the town of Amapá on the Igarapé da Serra there is a large stone alinement arranged in four separate groups with some stones still erect but with most of them scattered. Nimuendajú reports that one large granite slab was 4.38 meters long. A few sherds were found at the base of some of the stones. Rydén's descriptive comments suggest they belong to the pottery type, Piratuba Plain.

AÇAHYZAL

Along the Rio Frechal (today sometimes spelled Flexal) there is a large group of stones, only a few of which still stand because of disturbance. Contrary to the situation at other stone alinements, a great number of plain or incised sherds were found, which had a sandy paste different from the few sherds found at the other alinements. In his description, Rydén (MS.) comments that a red-brown paint was on the exterior surface of several sherds but the majority were incised. Our identification of these sherds from Rydén's plate 26 places the majority of them in the pottery types known as Uaçá Incised and Daví Incised. From these observations and our own investigations at Site A–8—Aurora, it is clear that both the quantity and quality of most of these sherds are not the same as usually found by the alinements. They are pottery types representative of the Aristé Phase and must have been deposited some time posterior to the construction and use of the alinement by the Aruã.

ANALYSIS OF MATERIALS

Since the Aruã made only one kind of undecorated pottery, Piratuba Plain, a light-tan to orange-surfaced, sherd-tempered ware, and only a fraction of a percent of the sherds are decorated, the seriation of the sites cannot be based on percentage analysis of pottery types alone. Careful study and comparison of the sherds from 7 cemeteries and 15 habitation sites belonging to the Aruã Phase on the Islands of Marajó, Mexiana, and Caviana revealed certain pronounced differences in vessel shape, decorative style and general quality of ceramic that seemed indicative of time lapse. Glass beads found at two sites establish them as late and provide a terminal point along with historical records of Aruã occupation. The seriation based on vessel shape is characterized by the disappearance of ring-impressed decoration and by improved control of the ceramic medium, shown in thinner walls and more regular surfaces, and more ingenious vessel shapes.

The Piratuba Plain and the few decorated substyles of this type from Sites A–5, A–8, and A–23 are of the cruder variety of Aruã pottery. The jar from Site A–5 is ornamented with a ring-impressed, applique band, and a few sherds with irregular incised lines (Aberta Incised) were found at Site A–8. These characteristics place the Aruã Phase sites in the Territory of Amapá at the beginning of the Aruã sequence, and the absence of contact materials adds confirmation to this seriation.

CERAMIC HISTORY

The development of the various styles and substyles of pottery from the Aruã Phase of the Territory of Amapá can only be discussed intelligently when the Aruã materials from Mexiana, Caviana, and Marajó have been studied. The analysis is therefore postponed until a later section of the report (see pp. 245, 525–537 for details).

DIAGNOSTIC FEATURES OF THE ARUÃ PHASE

The evidence from the habitation sites indicates that the pattern of small villages occupied for a short time, characteristic of the Aruã Phase on the islands, was the same on the mainland. The crudely made and predominantly undecorated pottery, Piratuba Plain, fits into the interpretation of a relatively low cultural level. Although secondary burial in large jars placed on the surface in remote parts of the forest is characteristic of the Aruã Phase on the islands, no such sites have, as yet, been reported in the Territory of Amapá. Stone alinements are associated with the Aruã Phase in the Territory of Amapá and the lack of similar structures on the islands can be explained by the fact that no stone was available. Although their function is problematical, they were always constructed on a high place commanding the best unobstructed view of the surrounding area, even if such construction meant the transportation of the stones by dugout from as far as 10 km. away. Large-scale disturbance by treasure seekers makes it impossible to reconstruct the original position of the stones in many cases, but in others the arrangement varies from a single row of stones to crude circles and triangles. The presence of a burial shaft at Rio Novo and sherds of Aristé Phase pottery types at Aurora and Açahyzal reflect an occasional usage of the high areas with peculiar stone alinements by the later peoples of the Aristé Phase. Aruã burials have not been found in the vicinity of the structures. The scattered sherds from occasional vessels do not suggest any extensive offertory practice utilizing pottery vessels; nevertheless, it seems most likely that these structures had some ceremonial function in the Aruã culture.

THE MAZAGÃO PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

The geographical description of the Territory of Amapá indicated that the Rio Araguarí-Amaparí divides the area into northern and southern regions (fig. 1). This geographical barrier seems to have been significant as a cultural boundary between two contemporaneous cultural groups, the Aristé Phase to the north and the Mazagão Phase to the south. The following description of the sites, excavations, and materials of the Mazagão Phase will demonstrate the geographical limitation of this cultural group.

SITE A–1—PIÇACÁ OCCUPATION

Fifteen kilometers up the Rio Piçacá from its confluence with the Rio Vilanova, a large area had been cleared on the northeast bank for a manioc garden. A cemetery (Site A–3) was in the midst of the garden. Our exploration of the vicinity revealed a large habitation site (fig. 4) on a slight hill 25 meters to the south of the cemetery site. The occupation site, A–1, covers a large part of this hill, with the forest growth of the area very dense, undoubtedly enriched from the large amount of ash in the refuse; however, all the trees are secondary growth. In the area of the site the steep bank rises 16 meters above the Rio Piçacá and 4 meters above the level of the bank just to the north in the region of the cemetery (A–3). The hill would have provided a complete command of movements up or down the stream, as well as an excellent defense position. Sherds were scattered over an area roughly conforming to the hilltop, measuring 110 meters in a north-south direction, and 60 meters in an east-west direction. The area was tested intermittently with 10 small test pits to determine the extent and depth of the deposits. The black, sandy-loam refuse layer with scattered sherds varied in thickness from the surface only, to a depth of 20 cm., averaging 10 to 15 cm. Beneath the refuse, the light-orange, sterile clay was tested to a depth of 1.15 meters. Owing to the extreme unevenness and shallowness of the refuse, stratigraphic work was not feasible. Instead, a test pit 2 by 2 meters was dug in the northern part of the site, in what appeared to be the region with the thickest concentration of sherds, and the materials cataloged as a unit. In this deposit, sterile clay was encountered at a depth of 12 to 15 cm. below the surface.

Besides 518 sherds, the following nonceramic objects were found: 1 large piece of yellow ochre (5.0×5.5×1.5 cm.) with one surface flattened from polishing, another slightly depressed from use scratches, with the remaining surfaces irregular; 2 scraps of *Jutahí* resin (one 5.0×3.5 cm.; the other 4×2 cm.); 1 coarse-grained, granite hammerstone fragment roughly rectangular in cross section (3.5–4.5 cm. wide, 2.0 cm. thick, 7.0 cm. long) with the edges slightly rounded but very little reshaping, one end slightly battered; 3 fragments of fire-burnt clay, and 21 fragments of quartz, granite, and indurated sandstone conglomerate of which 11 were fire burnt.

SITE A–2—LAURO

Two kilometers downstream from Site A–1, on the opposite (northwest) side of the river (fig. 5), the flood plain extends about 30 meters back from the edge of the clear, fast-running Rio Piçacá. The bank

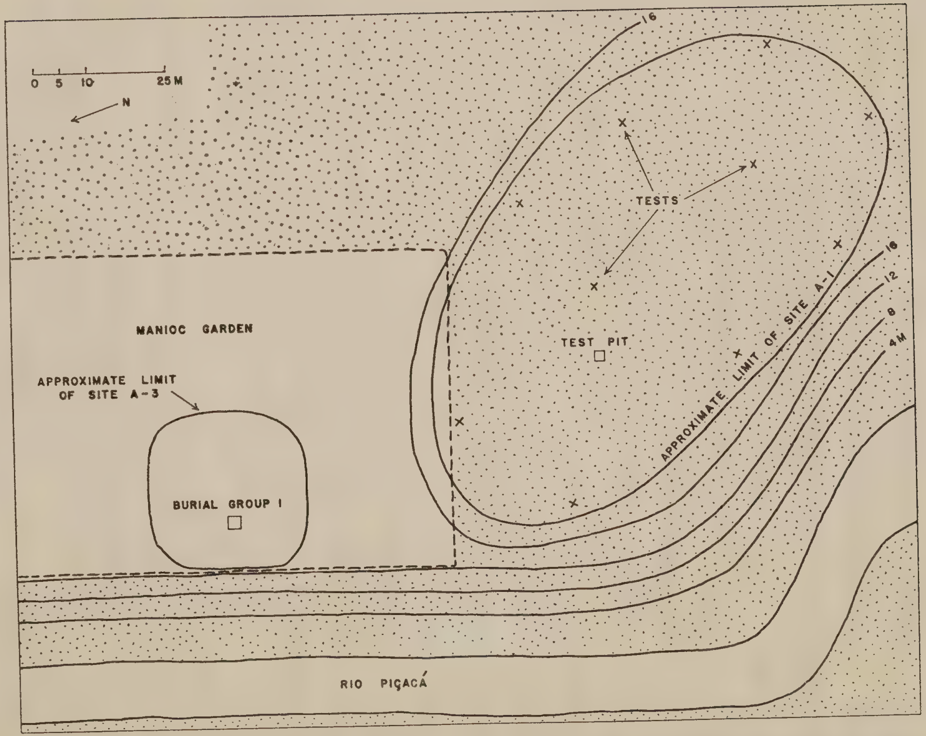

0 5 10 25 M
N
MANIOC GARDEN
APPROXIMATE LIMIT OF SITE A-3
BURIAL GROUP I
TESTS
TEST PIT
APPROXIMATE LIMIT OF SITE A-1
16
16
12
8
4 M
RIO PIÇACÁ

FIGURE 4.—Ground plan of A-1—Piçacá and A-3—Piçacá Cemetery, Mazagão Phase.

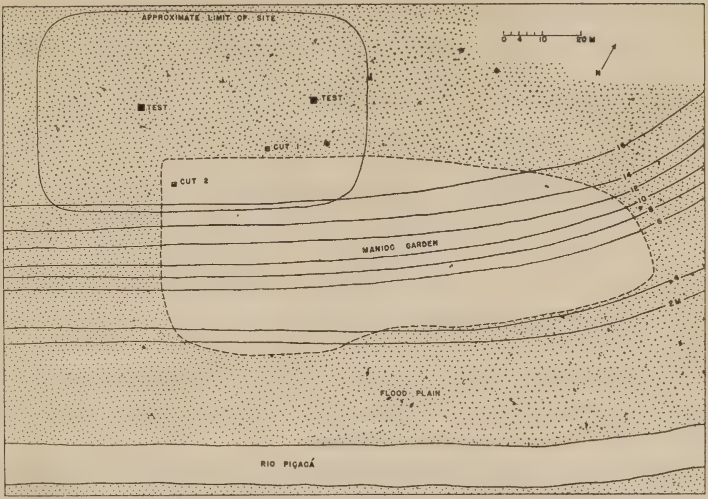


FIGURE 5.—Ground plan of A–2—Lauro, a habitation site of the Mazagão Phase.

rises sharply for about 7 meters, levels off a little, and then rises more gradually to a flattened summit 14 meters above the flood plain. The dense forest and heavy undergrowth had been cleared from the slope as well as the adjacent summit for the planting of a manioc garden. After the brush burning, the owner noticed sherds scattered on the ground in the northwest corner of his garden. Our sampling showed that this area had been a large habitation site, 83 meters in length, parallel with the river, and 52 meters in width. Throughout this extent the soil was gray-black, sandy loam and the undergrowth thick in the uncleared areas; beyond the site the soil was light brown with sparse undergrowth. Site A–2—Lauro was visited during the rainy season when, in spite of good drainage, the ground was extremely wet.

Stratigraphic excavation was attempted first, in the hope that the refuse might be deep enough to provide evidence of a ceramic change through time. Two cuts were made, the first outside and the second inside the zone of cultivation (fig. 5). The sherd sample was then increased by a surface collection and two test excavations, which were 2 by 2 meters upon completion.

Strata cut 1, 1.5 by 1.5 meters, controlled in 15 cm. levels, was excavated in the center of the east quarter of the site inside the undisturbed limits of the forest. The black, sandy loam of the refuse layers contained many small quartz and granite pebbles intermixed sparsely with small sherds. Many of the stones were fire burnt, but most of them were rock fragments natural to the soils of this part of the Territory of Amapá. Strata lines are not visible in this type of soil or refuse deposit due to the leaching effect of high rainfall in a tropical climate. At a depth of 35 to 38 cm. the soil changed to reddish-brown or light-brown clay without any mixture of sherds. There was no soil change in the native sterile clay, tested to a depth of 1.00 to 1.50 meters. The juncture of the refuse strata with the natural soil was irregular, conforming to the unevenness of the original ground surface. Level 0 to 15 cm. produced 216 sherds, 1 burnt-clay fragment, and 18 rocks; level 15 to 30 cm., 86 sherds, 2 burnt-clay fragments, 1 waterworn, oval pebble probably used as a pottery smoother (2.7×1.8×1.4 cm.); 1 grooved fragment of sandstone, probably a "shaft smoother" (groove depth 5 mm.; groove width 5–8 mm.; fragment 5.0×4.0×2.2 cm.); and 7 rock fragments, none fire burnt. Level 30 to 38 cm. had 29 sherds, 1 yellow ochre fragment with use scratches on one surface and the other surface areas irregular (size, 4.0×2.8×0.5 cm.), and 3 small rocks.

Strata cut 2 was dug in the unplanted corner of the garden 20 meters south of the center of the site area, using the same dimensions and levels as in strata cut 1. The refuse features were identical to those of cut 1, with the sherds giving out at a depth of 25 to 28 cm. upon an irregular and uneven surface. Level 0 to 15 cm. contained 221 sherds, 1 broken, natural, waterworn pebble of fine-grained diorite with one end showing extensive battering and use as a hammerstone (fragment length 5.0 cm., width 6.5 cm., thickness 2.0 cm.), 1 unworked quartz flake, 1 burnt-clay fragment, and 13 rocks. Level 15 to 30 cm. had 77 sherds and 4 burnt-clay fragments.

The two test excavations and surface collections added 873 sherds and the following nonceramic objects to the materials from Lauro: 1 ax fragment of fine-grained diorite with the bit missing, butt-end flat with the surfaces well-polished (fragment length 8.5 cm., width 5.0 cm., thickness 3.5 cm. at the butt end tapering to 2.0 cm., with an oval cross section); 1 percussion flake of fine-grained diorite that could have been used as a scraper but shows no evidence of intentional or use retouch (roughly triangular, 5 cm. long, 4 cm. wide at the bulb of percussion, 8 mm. thick and 8 mm. wide at the point); 4 burnt-clay fragments; and 43 rock fragments of which half are fire burnt and the others are a miscellaneous collection of quartz, iron concretions, granite, and indurated sandstone fragments, probably all natural inclusions in the soil.

All the sherds were relatively small, due to the brittleness of the *cariapé* and sand-tempered paste, with their surfaces badly eroded.

SITE A–3—PIÇACÁ CEMETERY

Piçacá cemetery is 25 meters north of the occupation site, A–1, on a flat area at the edge of the steep river bank, 4 meters lower than the hill (fig. 4). A manioc garden covers the entire cemetery and much of the surrounding area; as a result, the majority of the vessels were badly broken from cultivation activities. However, since these vessels originally had been partially buried in the ground, a number of them were still intact. The amount of excavation that could be undertaken was restricted by the planted crop. Fortunately, there was a good-sized area near the bank not under cultivation and surface sherds indicated this to be the center of the site, which extended over an area roughly 30 meters in diameter.

The light-brown sandy loam of the cemetery is not distinguishable from the soil of the surrounding area, indicating no use except as a depository for the burial jars. In addition to 12 complete or partially broken jars or bowls, 1,281 sherds were collected from the site. Most of these large fragments belong to only a few vessels. One of the most unusual pottery fragments was a large hollow foot (Mazagão Plain) with five toes probably representing a turtle, measuring 8 cm. high, with the diameter of the sole 14 cm. and of the leg 10 cm. (fig. 6). No other fragments of this urn were found nearby. It is undoubtedly

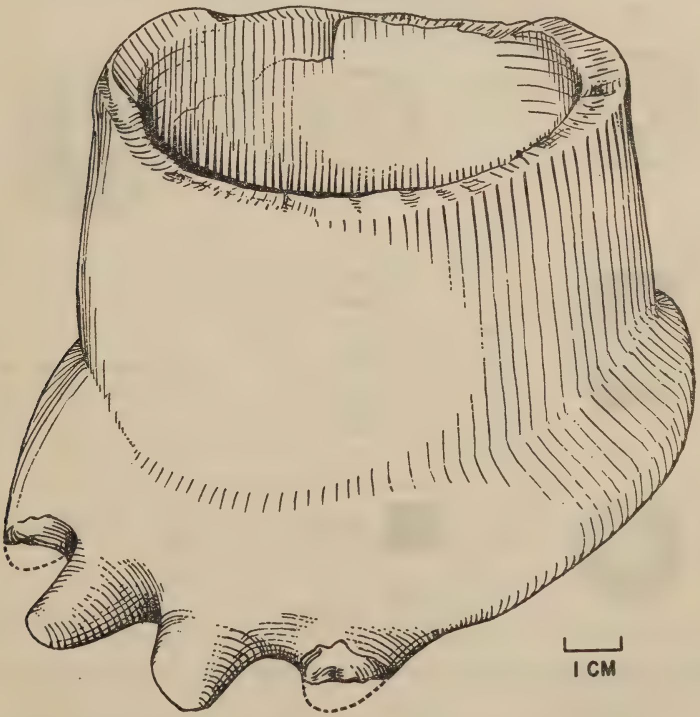


FIGURE 6.—Foot of a zoomorphic (turtle) urn from A-3—Piçacá Cemetery, Mazagão Phase.

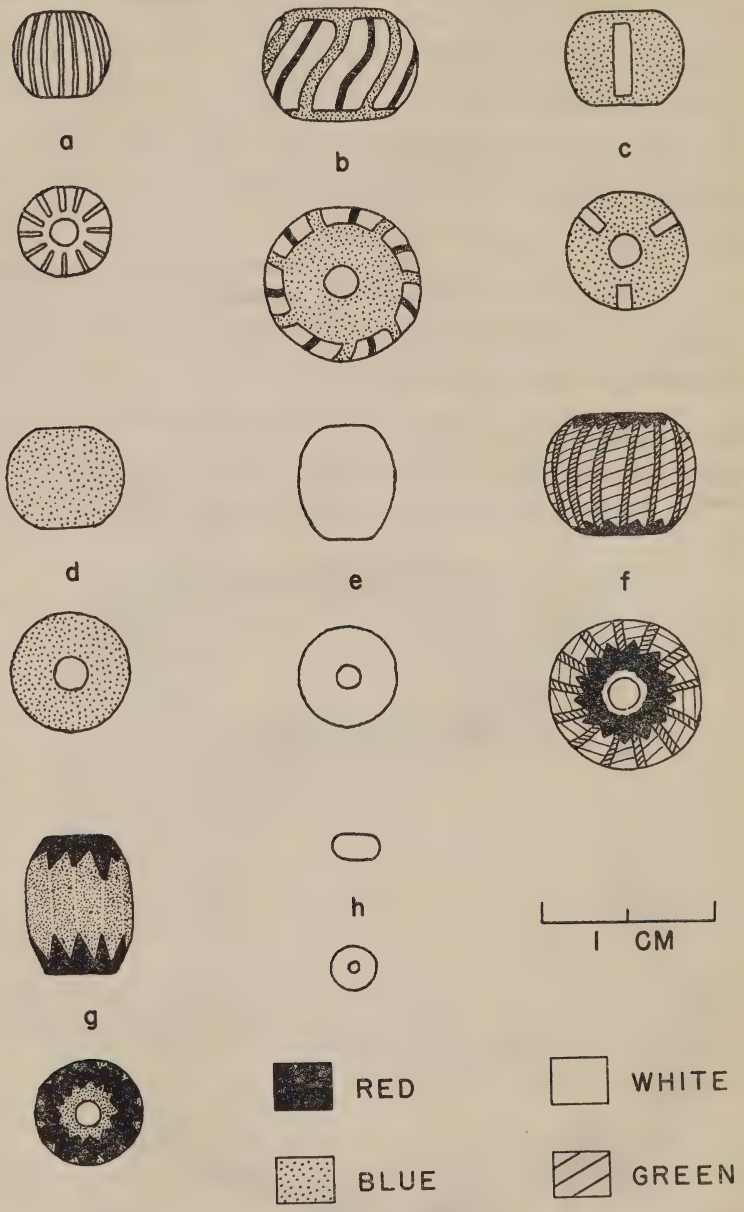

a
b
c
d
e
f
g
h
1 CM
RED
WHITE
BLUE
GREEN

FIGURE 7.—Glass trade beads from A-3—Piçacá Cemetery, Mazagão Phase.

from a zoomorphic *jaboty* urn of the type found by Lima Guedes and Farabee on Ilha do Pará (see pp. 71–73 and pl. 17).

A few years previously Fritz Ackermann, a geologist of the Territory of Amapá, had excavated a jar in the same cemetery 7 meters northwest of our Burial Group 1 in which he discovered a large number of European glass trade beads. These specimens are now in the Museum in Macapá. Since the beads from the burial have not been kept as a unit, an exact count of each type is not possible; the following varieties are included:

TABLE A.—*Glass beads from A–3—Piçacá Cemetery*

Color	Description	Count
Clear glass with white stripes.	Round with white lines inside running lengthwise; sometimes called "Gooseberry" (fig. 7, *a*).	(?)
Blue with white, red and blue overlay.	Round, 6 mm. diameter, with a colored, barber-pole overlay on the exterior (fig. 7, *b*).	(?)
Azurite blue with white stripes.	Round with inlaid narrow white stripes running almost from hole to hole (fig. 7, *c*).	(?)
Azurite blue	Round, 5–8 mm. diameter (fig. 7, *d*)	Most common variety in sample examined.
Porcelain white	Round, 5 mm. diameter (fig. 7, *e*)	(?)
White, red, and green	Layered glass with star-shaped cross section revealing an inner white layer, a red middle layer, and an outer layer of light green upon which there are darker green stripes. No terminal grinding. Sometimes called "Chevron or 12 Apostle beads" by bead experts (fig. 7, *f*).	(?)
Red and blue	Variety of "Chevron bead" with a red core, blue interior layer, and a solid blue exterior. Ends ground to expose the star-shaped red layer in contrast to the blue; barrel-shaped (fig. 7, *g*).	(?)
Porcelain white, azurite blue or dark, opaque blue.	Small, "Seed beads" varying in shape from round to barrel to disk-shaped, ranging from 1–2 mm. in diameter (fig. 7, *h*).	(?)

Burial Group 1.—Five burial jars were found together slightly west of the center of the cemetery area (fig. 4). The base of jar A was 45 cm. below the present surface. This burial jar had been broken by the later burial of jar C and further disturbed by a large root growing through it. The existing fragment of jar A, a small, flat, pedestal base 12 cm. across, with curved sides rising 20 cm. to a maximum existing diameter of 32 cm., contained no bone fragments. The vessel was a good example of Mazagão Plain.

The base of jar C was 42 cm. below the surface next to jar A. It had a cylindrical body 40 cm. tall with two applique nubbins suggesting breasts. The jar was 21 cm. in diameter at the mouth, 25 cm. in the widest body diameter and had a short, pedestal base 18 cm. in diameter (fig. 8). It was plain except for 4 small holes 1 cm. below the rim edge, matching in spacing 4 corresponding holes at the lower edge of the lid. The face-lid (fig. 8), almost completely restored from fragments found inside and around the jar, was similar in general shape to the truncated-cone type used in the Rio Maracá area. It was 10.5 cm. high, 21.5 cm. in diameter at the rim that joined the

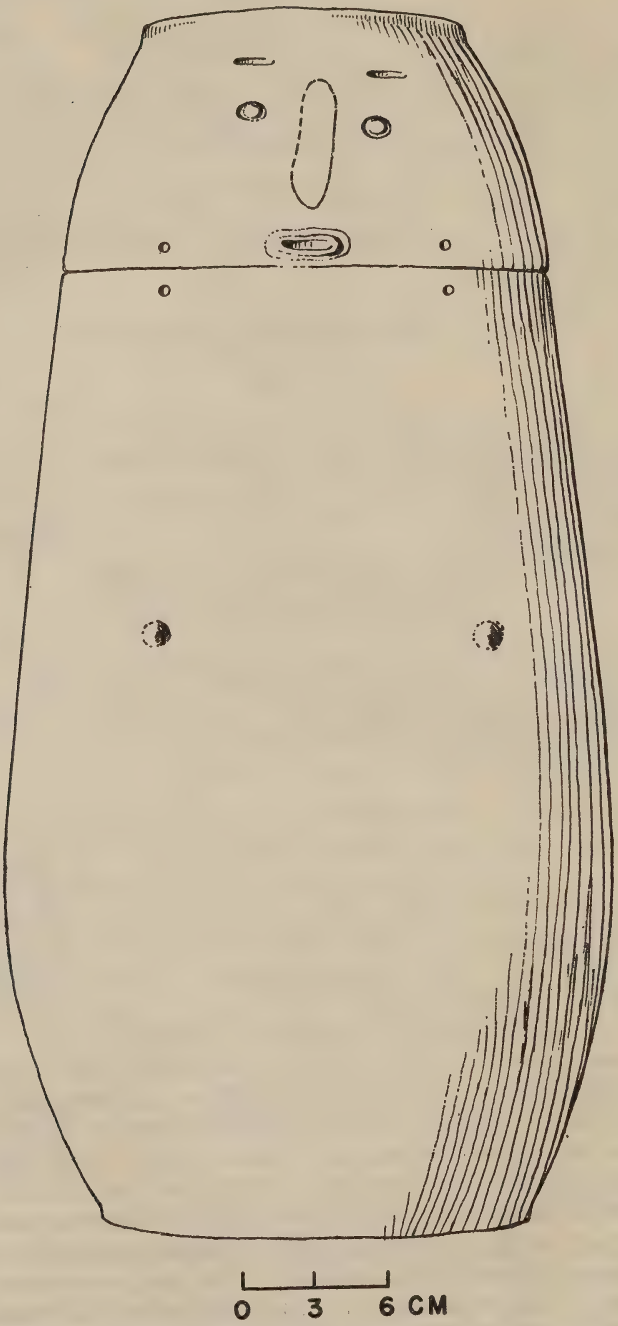


FIGURE 8.—Jar C (Mazagão Plain), Burial Group 1, A-3—Piçacá Cemetery Mazagão Phase.

jar, and 13 cm. in diameter at the flat top. The face was asymmetrically applied by incising eyes and eyebrows and adding appliques for nose and mouth. The surfaces of both the lid and jar were slightly uneven, but not rough, and both were good examples of Mazagão Plain.

A mixture of sand, a few miscellaneous, scattered sherds and bone scraps filled jar C. Traces of bone appeared at a depth of 18 cm. from the rim of the jar, all in extremely poor condition due to the moisture that had collected in the jar after the lid had fallen in. Apparently this jar had been only partially filled with bones and sand, filling up completely when the lid broke and fell inward. At a depth of 20 cm. inside the jar, a small shallow bowl (pl. 7, *c*) was inverted over several scraps of the occiput. Just below it, right-side-up at a depth of 25 cm., was a miniature jar (pl. 7, *e*) containing three molar fragments and pure white sand. The bone fragments of the urn represent the secondary burial of a young adult, but no anthropometric details can be given because of the poor condition of the bone. Both small vessels are excellent examples of Mazagão Plain. The small, open bowl measures 11.6 cm. in diameter and 4.5 cm. in height, with a flat base 5.0 cm. in diameter. The lip is uneven and modeled with two pairs of small, triangular, rim-adornos opposite each other. The miniature jar is much cruder and more asymmetrical, with a globular body 9 cm. in diameter, a flat base 5 cm. in diameter, a short neck 5.5 cm. in diameter with a slanting rim. The total height varies from a maximum of 5.5 cm. on one side to a minimum of 4.5 cm. on the side opposite.

Another tall, cylindrical vessel, jar B, was 19 cm. north of jar C with its base 31 cm. below the surface. Since the existing jar fragment is 33 cm. tall and the fragments of a possible plain, inverted bowl-lid were inside, a portion of the jar and lid must have originally projected aboveground. The interior was filled with sandy loam; 15 cm. below the rim, bone scraps were mixed with sand. No teeth were found nor were any bone fragments large enough for identification. The jar was 21 cm. at widest body diameter, with a mouth diameter of 18. cm. and with a short, pedestal base 1 cm. high and 12 cm. in diameter. On the back of the jar a dorsal ridge 5 mm. high extended vertically from the rim halfway down the body. One small nubbin on the opposite side just below the broken top probably represented a breast. The vessel was Mazagão Plain with a large amount of crushed white quartz and mica temper visible on the surface. The exterior surfaces were smoothed but irregular, with the body wall 1 cm. thick. Several fragments from inside the jar appear to be rims of both the jar and lid; they have small holes near the lips, similar to those of jar C.

A large, depressed globular jar, vessel D (Mazagão Plain), was 48 cm. from jar C and 22 cm. to the east of jar B, with its base 39 cm. below the surface. The rim was missing, but the body measured 31 cm. high, 43 cm. in maximum diameter, 24 cm. in mouth diameter, and had a flat, pedestal base 11 cm. in diameter. The interior of the jar was filled with very wet, sandy loam and traces of bone fragments. A small, broken bowl (vessel E) was inverted over skull fragments inside the jar, near its center and 20 cm. below the rim. Beneath these, a few scattered fragments of long bones were arranged parallel to each other alongside a scrap of the left side of the mandible, which contained several badly worn molars. The bones of this secondary burial were too fragmentary to permit a detailed analysis beyond the fact that they were of an adult human with complete tooth eruption and badly worn molars with caries.

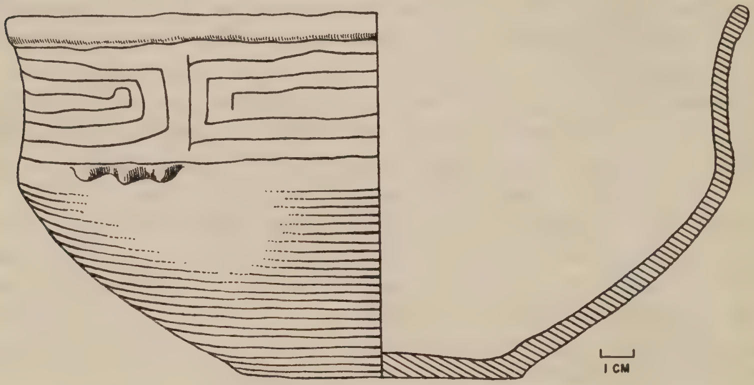


FIGURE 9.—Vessel E (Uxy Incised), Burial Group 1, A-3—Piçacá Cemetery, Mazagão Phase.

Vessel E was reconstructed (fig. 9). It is a poor, late example of Uxy Incised with crudely applied, light incisions, a triple nubbin applique around the waist and a thickened, slightly everted rim. The surfaces are light tan to dark gray, and the shape is very irregular and asymmetrical, measuring 22 cm. in mouth diameter, 12.4 cm. in height and 9 cm. in diameter of the flat, slight pedestal base.

The fragments of jar Z, a cylindrical, anthropomorphic burial urn seated on a clay bench, were 42 cm. west of jar C and only 20 cm. below the surface. A small ax (fig. 10, *a*) of indurated sandstone, 6.2 cm. long, 4.9 cm. wide, and 2.7 cm. thick, was next to the left leg of the bench. This ax was only partially shaped beyond the natural form of the rock, with the upper end rounded and used as a hammerstone and the bit well polished. A small, granite polishing stone (fig. 10, *b*), rounded on all surfaces and probably used in ceramic polishing,

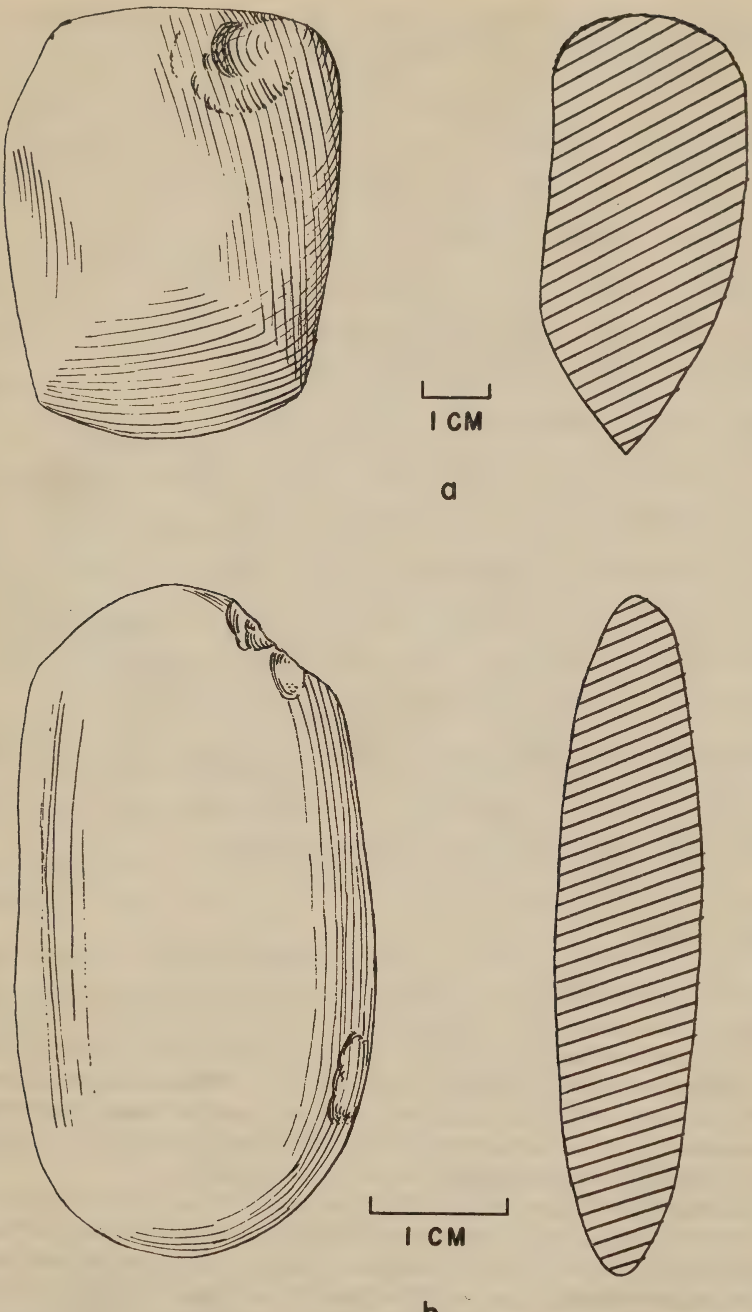


FIGURE 10.—Stone artifacts associated with Jar Z from A-3—Piçacá Cemetery, Mazagão Phase. *a*, Small ax. *b*, Polishing stone.

was among the sherd fragments of the vessel. It was oval, measuring 4.8 cm. long, 2.3 to 2.7 cm. wide and 1.2 cm. thick.

Although a complete reconstruction of jar Z was not possible owing to the eroded condition of this soft and unusually sandy variety of Mazagão Plain, sufficient fragments were recovered to establish the form as a local copy of the well-known Maracá seated anthropomorphic urns. The reconstructed bench was 31.0 cm. long, 14.5 cm. wide and stood 4.5 cm. high. It had the tail (5.5 cm. long) of a *cutia* (agouti) at one end and a well-modeled *cutia* head at the other end (pl. 7, *a*). The head rose 8 cm. above the bench and was 4 cm. wide and 6 cm. long. A small, raised, punctate rib ornamented the bench top at each end. The oval, tubular body of the man seated upon the bench was 21 by 13 cm. in diameter, with the height unreconstructable from the fragmentary condition of the sherds. The legs with swollen calves, indicating use of ligatures, were attached to the body so that the feet were suspended in midair. The legs are fairly well modeled with prominent ankle bones, but each foot has 8 toes. Both arms are circular in cross section and the seven-fingered hands have cup-shaped palms to rest upon the knees. The head of the body is the lid of the burial urn but, although all the facial features of mouth, nose, eyebrows, and one ear were recovered, insufficient pieces prevent a complete reconstruction. The mouth was 6.2 cm. long and 1.0 cm. wide, with the teeth represented by a long, horizontally incised line intersected by numerous vertical lines. The eyes were made by appliques 3.8 cm. long, 1.8 cm. wide, and 4 mm. high with a long, deep, lengthwise incision. The eyebrow was formed by a slight rib. An applique 5.2 cm. long and 1.4 cm. wide formed the nose, which had two small holes at the base to represent the nares.

From the fill 1 meter to the southeast of this jar and a few centimeters below the surface came a piece of red ochre with facets worn by rubbing.

Burial 2.—The broken upper edge of another vessel was level with the surface of the ground 1.60 meters south of jar D of Burial Group 1. Excavation revealed a tall Mazagão Plain jar having a cylindrical body 22 cm. in diameter with a bulbous expansion at the bottom 31 cm. in diameter and with a slightly concave base. The existing height was 35 cm. Inside the jar, bone scraps were mixed with sandy loam from a depth of 15 cm. to the jar bottom, but the condition was too poor to permit any identification. No teeth were found.

Burial 3.—A large, broken, globular-bodied jar was 1 meter south of jar D of Burial Group 1 and 50 cm. from Burial 2, with its base 50 cm. below the surface. A large root passed directly through the body and no bones remained inside. The vessel was typical Mazagão Plain with a very sandy paste and a brownish-red surface. The flat rim was slightly thickened on the exterior, giving an exterior mouth diameter of 32 cm. The body diameter was 50 cm., diameter of the slight, pedestal base 20 cm., and the estimated body height 60 cm.

Burial 4.—This tall, cylindrical jar of Mazagão Plain was 1.25 meters north of jar D of Burial Group 1. The rim was broken off approximately 5 cm. below the surface and the base was 41 cm. in the ground. The burial urn had the same general shape as jar C of Burial Group 1, measuring 22 cm. in diameter at the broken upper edge, 28 cm. in maximum body diameter, and 36 cm. in existing height. The small, flat, pedestal base was 15 cm. in diameter. No lid fragment was recovered. The vessel was completely filled with moist dirt, with the lower third of the contents including coarse sand mixed with decomposed bone scraps. Two small vessels rested side by side in the bottom of the burial urn. One, an Anauerapucú Incised bowl (pl. 7, *d*) with an incised, in-sloping shoulder and a single, short, strap handle, contained pure, coarse sand, small bone fragments and a little dirt. It is an excellent example of the typical Anauerapucú Incised rectilinear, squared-spiral, incised design filled with white chalk. The bowl has a gray, fire-clouded, well-smoothed surface and good symmetry, and is by far the best-made vessel from the cemetery. The mouth diameter is 9.0 cm., body diameter 13.5 cm., and height 5.6 cm. The small, strap, looped handle has a slight groove down the center and is 1.5 cm. wide. The base is slightly flattened. Its companion, a small Vilanova Plain jar (pl. 7, *b*) with two broken-off protrusions leaving holes low on one side, was filled with coarse sand, 3 molars, and a few bone scraps. The neck is slightly constricted and the rim thickened on the exterior. The mouth diameter is 5.3 cm., body diameter 7.0 cm., diameter of the small, flat base 2.5 cm., and total height 6 cm. Although well smoothed, the exterior is irregular in places.

Burial 5.—A large, globular Mazagão Plain jar with a vertical neck was found intact 25 cm. west of the tall jar of Burial 4, with its base 50 cm. below the surface. The diameter of the small, flat pedestal base is 13 cm., of the body 43 cm., and of the mouth 31.5 cm. The total height is 34 cm., and the neck height 10 cm. Two human faces, modeled on opposite sides of the neck, are set off by paired vertical bars in the same style as the jar from Site A–4, Burial 3 (fig. 13, *b*). The eyes and mouth are represented by small, relief buttons 5 mm. above the surface, with depressions in their centers. Flanking the face are two parallel, applique bars 8.0 cm. long, 1.0 cm. high, and 1.2 cm. wide with horizontally incised, parallel lines. The four sets of these vertical bars seem to mark the limits of each face. The surface of the vessel is badly eroded but originally was well smoothed in spite of being slightly irregular.

Miscellaneous sherds, sandy loam, fragmentary scraps of long bones, and "bone dust" were intermixed inside the jar. Unfortunately, the poor preservation of the bones did not permit any physical anthropological observations. Several fragments of an Anauerapucú Incised lid, with incisions on the exterior and interior, were found upon the rim and shoulder of the jar. This pedestal-basin lid, identical in shape and design to one from Site A–4 (figs. 13, *a*; 14, *b*), has a high, cylindrical, pedestal base supporting a shallow, wide basin, which was inverted over the jar mouth.

SITE A–4—VALENTIM

Valentim cemetery is on a high hilltop about 2 km. from the northeast bank of the Rio Piçacá and 4 km. above its confluence with the Rio Vilanova. The top of the hill levels off for an area of about 25 meters in diameter, but the vessel fragments were all on the north edge of the hilltop, spread over a 5- by 4-meter area on the surface or buried in light orange clay. Our guide asserted that he could remember when the vessels had been intact and said that they had been broken by the children from a house formerly nearby. At our arrival only a few scattered sherds were visible on the surface and the area was covered with a dense, secondary forest growth and underbrush. Many trees were growing through the vessels, making the problem of excavation extremely difficult (pl. 3, *b*). Most of the vessels were so badly broken, decomposed, or disturbed by root action that all measurements had to be obtained in situ with a re-check made in the laboratory from a partial reconstruction of the fragments.

In addition to the excavation of several burial groups where some of the vessels were still partially intact, a concentration of badly broken fragments of numerous vessels was recovered from the center of the site in association with 42 European glass trade beads. The beads included the following varieties:

TABLE B.—*Glass Beads from A-4—Valentim*

Color	Description	Count
Opaque, sky blue	Long, tubular, square in cross section (6 mm.), 7.5 cm. long with rounded edges, hole 1.5 mm. in diameter. Middle layer of white surrounded on both sides by opaque, sky blue. Designated by one bead authority as a variety of "Bugle Bead" (fig. 11, *a*).	1
Porcelain white with red stripes.	Round, to egg shaped, 6.5 mm. diameter with 3 vertical, red stripes, 1 mm. wide (fig. 11, *b*).	1
Porcelain white with red spots, bordered with blue.	Spherical, 8 mm. in diameter, with three red spots, 2–4 mm. diameter, bordered with blue; hole diameter 1.5 mm. (fig. 11, *c*).	2
Porcelain white with red lines	Small, tubular, round cross section, 3 mm. diameter, 6 mm. long with thin (0.5 mm.), straight red lines running lengthwise. Designated by one bead authority as a "short Bugle Bead" (fig. 11, *d*).	2
Porcelain white	Spherical to egg shaped; diameter 5–8 mm., length 6–8 mm. (fig. 11, *e*).	5
Opaque blue	Round, diameter 5 mm. Broken fragments only	3
Porcelain white	Small, "Seed Beads" round, discoidal or barrel shaped with diameter from 2.5–4.5 mm, length 2.0–3.0 mm. (fig. 11, *f*).	28
Total		42

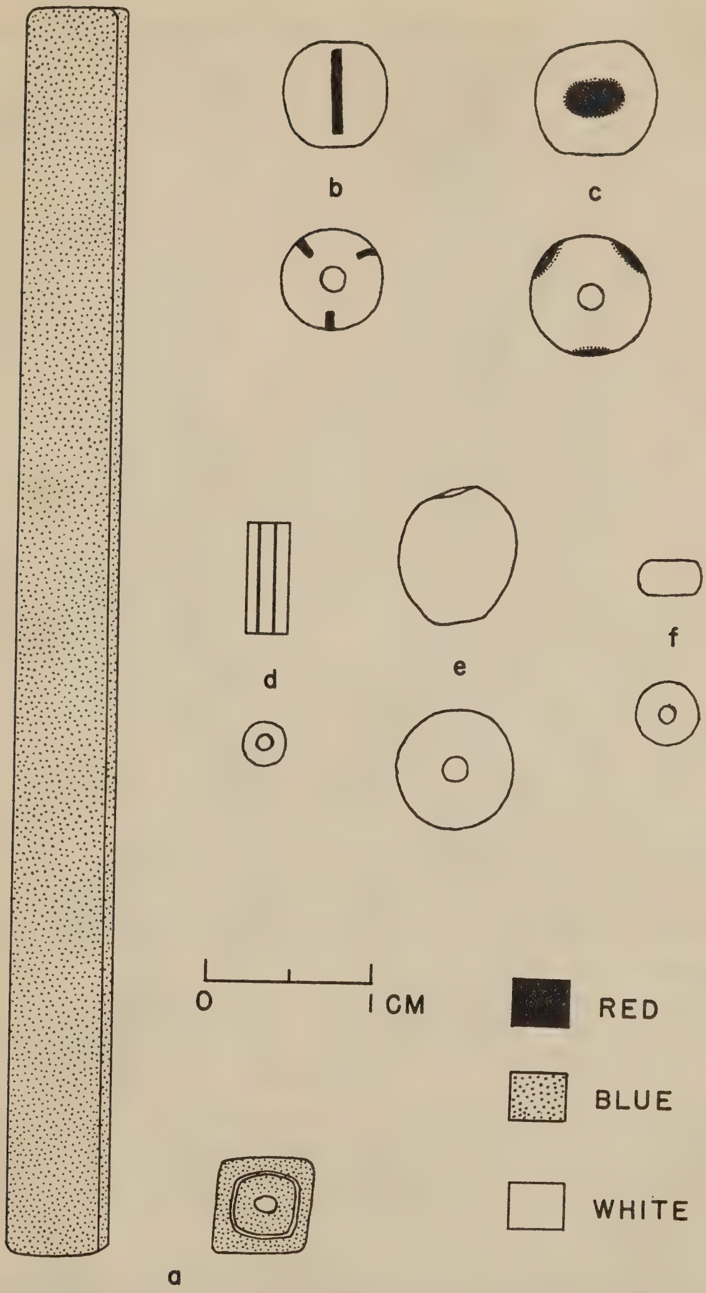

b
c
d
e
f
0
1 CM
RED
BLUE
WHITE
a

FIGURE 11.—Glass trade beads from A-4—Valentim, Mazagão Phase.

A total of 434 sherds, mostly rims, bases or diagnostic body sherds was taken into the laboratory for analysis and found to represent at least 34 separate vessels. Twenty-two percent of the sherds are Mazagão Plain, 39.0 percent Vilanova Plain, 27.0 percent Camaipí Plain, 5.1 percent Anauerapucú Incised, 6.4 percent Piçacá Incised, and 0.4 percent Unclassified (pl. 16, *c*).

Burial 1.—A Vilanova Plain jar was at the western edge of the site, with its base 28 cm. below the present surface. It had a round base, a globular body 42 cm. in diameter, curving up to join a gently sloping narrow neck 8 cm. tall and 24 cm. in diameter at the rim, with the total height of the jar 28 cm. The jar lip was rounded and slightly thickened on the exterior. The surface, now badly eroded, was originally smoothed and fairly even. A deep (13 cm.), thin-walled basin was inverted over the mouth, with its rim resting on the shoulder of the jar. This lid, also Vilanova Plain, had a rim diameter of 32 cm., with the side walls slanting inward to a convex base, 24 cm. in diameter. The rim of the jar was slightly thickened on the exterior.

Burial Group 2.—A badly broken, anthropomorphic, cylindrical burial urn, seated on a clay bench, jar A (fig. 12), was located 5 meters southeast of Burial 1. During the excavation of jar A, jar C, a vessel like the one from Burial 1 and with a similar lid, was found adjacent to the back of the anthropomorphic figure at a depth of 35 cm. Twenty-two centimeters to the southeast of jar A, a second large globular vessel, jar B, with a body diameter of 58 cm., was buried 30 cm. beneath the surface. Both vessels B and C were badly damaged by root action from a small tree growing out of the center of jar C (pl. 3, *b*). The earth inside the two vessels contained more humus and was slightly grayer and darker than the surrounding light-brown, natural clay, probably indicating decomposition of bone from the secondary burials. Near the right side of the anthropomorphic figure, at the same depth as the bench, was a small jar with a strap handle, designated as jar D.

Jar A, a Vilanova Plain male anthropomorphic figure, contained bone-flecked dirt considerably grayer than the surrounding soil. It was broken off just above the knees where it protruded from the ground, and the pieces were scattered in the surrounding area. The situation of this jar corresponds to that of the anthropomorphic jar excavated at Site A–3, in that both were incompletely buried so that from the waist up they projected above the ground and both were associated with a group of nonanthropomorphic funerary jars buried at substantially greater depth.

In execution, jar A represents a pronounced divergence from the Maracá style, although the generalized features show close affiliation (cf. fig. 12 and pl. 18). The cylindrical body is 19 cm. in diameter

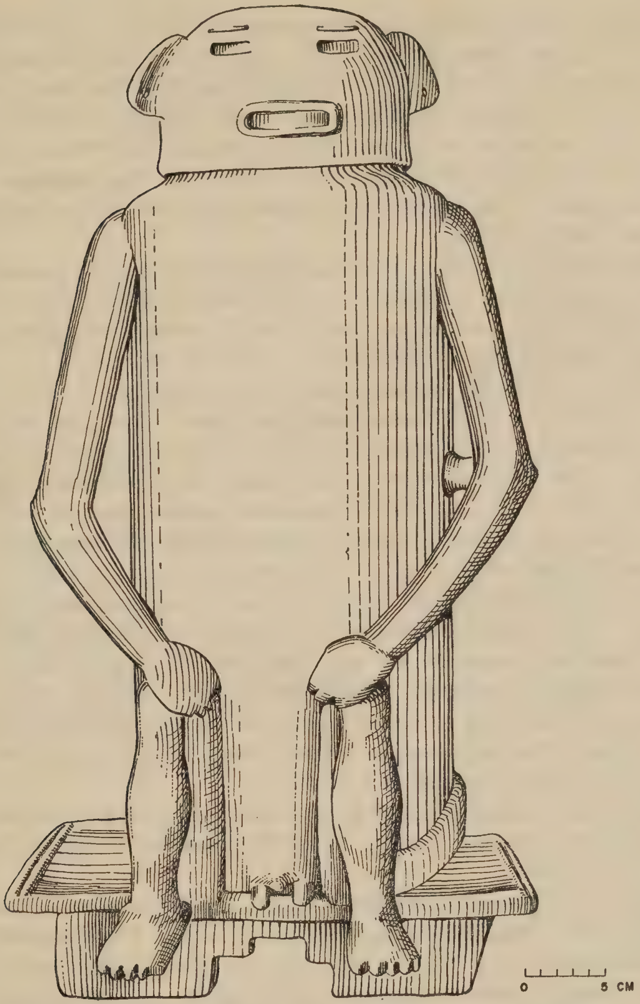


FIGURE 12.—Reconstruction of jar A, Burial Group 2, A-4—Valentim, Mazagão Phase.

and 48 cm. in height from the top of the bench to the rim. Six cm. below the rim, the walls curve sharply inward for 3 cm. to join a short (3 cm.) vertical collar ending in a direct rim with a mouth diameter of 13 cm. The head, which forms the lid, fits over the short neck to rest on the shoulders. The long arms (upper arm length 18 cm., lower arm length 12 cm., hand length 4.5 cm.) made from solid clay rolls 3 cm. in diameter, are attached forward from each side just below the shoulder. Elbows jut out toward the sides and hands with concave palms rest on the knees. A small clay cylinder, 3 cm. in diameter and 3 cm. long, braced the left arm against the vessel wall. The legs rise against the body to the knee; the lower leg hangs free with the five-toed feet unsupported. Anatomic details include elbow, wrist, and ankle bones, swollen calf, vertebral column, male genitalia, and six fingers on each hand. An applique band 5 cm. high and 1 cm. thick fits around the base of the body at its junction with the bench.

The bench, 32 cm. long, 15.5 cm. wide, and 7 cm. high, was supported by two legs running lengthwise with the center of each cut out. The bench was unadorned except for a low rib along the upper edge (cf. bench of Barama River Carib, Gillin, 1936, pl. 18, a).

The lid, which forms the head, is approximately dome-shaped, with the sides curving inward to give a basal diameter slightly less than the maximum diameter of 21 cm. The reconstructed height is 11 cm. The interior edge of the front has a shelflike projection, widest at the center and fading into the rounded rim at each side in front of the ear, possibly made to assure a firm, rigid mounting of the lid upon the neck of the body. The mouth, 7 cm. long and 2 cm. wide, was made by a continuous applique 5 mm. thick around a depressed center. The eyes, depressions cut evenly 2 mm. into the surface and smoothed, measure 4.0 cm. long and 1.5 cm. wide, with the corners slightly rounded. Eyebrows, represented by long, slender appliques 3 mm. high, curve downward to join the top of the ear, which is a curved appendage 5.5 cm. long, projecting 1.4 to 2.0 cm., with a small hole punched in the lobe.

The surfaces of both lid and jar are light tan, even and well smoothed leaving faint polishing tracks. Wall thickness of the lid is 5 mm. and of the body 7 mm.

Burial 3.—Three meters north of the anthropomorphic urn was a large, globular Mazagão Plain jar covered with an Anauerapucú Incised pedestal-basin lid. Both the burial jar and the lid were badly broken, further complications being added by a tree growing through the center of the jar. Apparently, the burial jar had originally been only partially interred, for the base was only 23 cm. below the surface. The waist and neck were broken off and sloughed 30 cm. to the side with part of the lid still in position. The dirt inside the vessel had been too badly disturbed by root action to leave any traces of bone fragments.

The burial jar was similar in size and features to the large Mazagão Plain jar of Burial 5, Site A–3, although the relief modeling was more prominent (fig. 13, *b*). The globular body was 50 cm. in diameter, with a flat base 15 cm. in diameter, and a mouth diameter of 38 cm. The vertical neck was 10 cm. high; the total jar height was 43 cm.

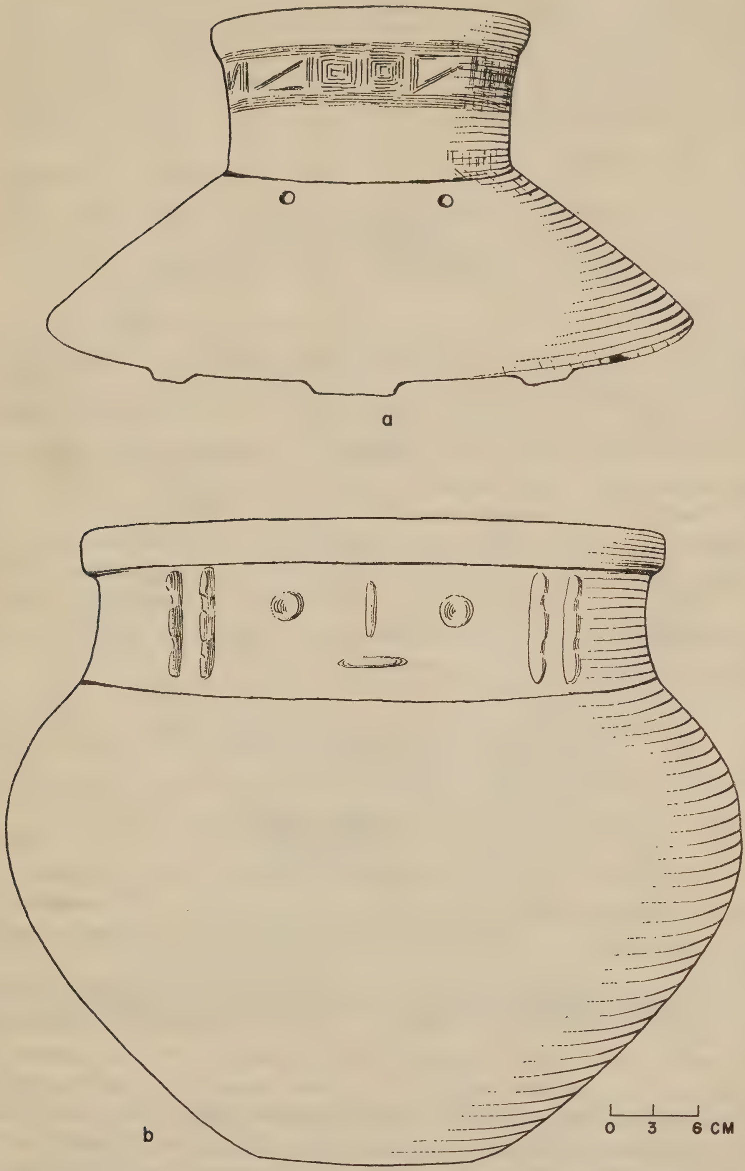


FIGURE 13.—Pottery vessels from Burial 3, A-4—Valentim, Mazagão Phase. *a*, Pedestal basin lid (Anauerapucú Incised). *b*, Burial jar (Mazagão Plain) upon which the lid had been placed.

The face was constructed of appliques. The nose and mouth were fillets of equal size and prominence, 3.5 cm. long and 7 mm. wide. Each eye was a flat nubbin 1.8 cm. in diameter with a small depression in the center 5 mm. in diameter and 3 mm. deep. The nearest vertical bar on each side of the face was 4 cm. from the eye. These two parallel bars with two deep notches across them were 7.5 cm. long, 1.3 cm. high, 1.2 cm. wide, and 2.5 to 3.0 cm. apart. The faces, on opposite sides of the neck, were separated by pairs of vertical bars. The flat rim of the vessel was rectangular in cross section with exterior thickening, giving a thickness of 1.5 cm. as compared to the 1 cm. at the body wall.

If the lid had not been found in situ on the jar mouth and neck, one might reconstruct quite differently the position and usage of this inverted basinlike lid (fig. 13, *a*, *b*). It appears as if these elaborately incised basins on a high pedestal might have been made for some other use than as lids because the applique and incising along the inner edge of the bowl were completely hidden by inversion over a burial jar. The large, open basin measured 40 cm. in diameter and 11 cm. in depth (fig. 14, *b*). This basin was raised on a cylindrical pedestal 10.5 cm. tall, the sides of which flared outward from a diameter of 18.5 cm. at the point of attachment to the basin to 22 cm. at the base. A peculiar feature of the basin bowl was a series of 4 equally spaced holes, 8 mm. in diameter, pierced through the wall just above the juncture with the pedestal. They were all made when the clay was wet. The holes do not seem to have been functional in holding the lid in place, as no corresponding holes are found in the jar. The position and angle of the holes would have permitted suspension by means of thongs or fiber rope with the basin upright and the pedestal down, which, as already stated, would seem to be more in accordance with the positions of the decorations. However, sherd fragments of several of these pedestal basins were recovered from this cemetery as well as cemetery A–3, indicating their repeated usage as lids for burial jars.

The decorated motifs were the angular spirals and straight, parallel lines typical of Anauerapucú Incised. All the incisions were originally filled with white chalk, traces of which remain in over 50 percent of the lines. The pedestal had a 4.5 cm.-wide band of incised decoration beginning just above the externally thickened edge of the base. The rim of the bowl originally had four adorno lobes: two faces 12 to 14 cm. long and extending 1.0 to 1.2 cm. beyond the rim edge opposite each other, and two smaller, plain lobes 4.5 to 5.0 cm. long extending 1.0 to 1.2 cm. beyond the rim, opposite each other and equally spaced between the face lobes (fig. 14, *a*). The two faces were made with applique, ranging from 3 to 5 mm. high. The mouth was made more realistic by the addition of a long, horizontal incision crossed by two short, vertical ones. Each face covered the entire lobe, thus breaking the incised border in two places. The incision was on the flat, slightly raised border formed by the beveled surface of the interior rim thickening. The bowl exterior and the pedestal interior were undecorated.

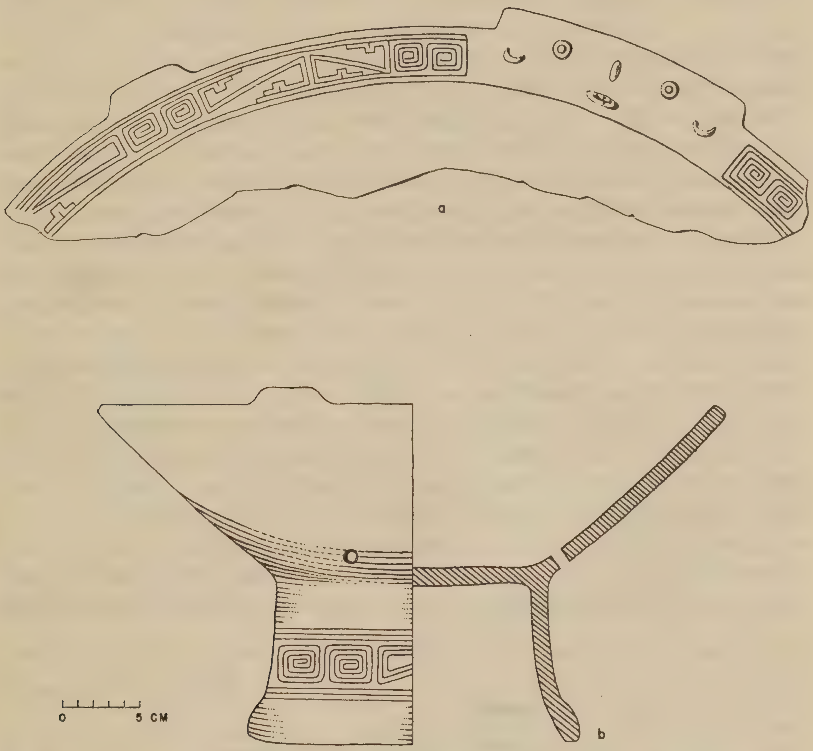


FIGURE 14.—Anauerapucú Incised lid from Burial 3, A–4—Valentim, Mazagão Phase. *a*, Detail of the modeling and incision of the inner lip of the pedestal basin lid shown in figure 13, *a*. *b*, Exterior and cross section view of the same lid. (The rim is inaccurately drawn; for correct profile, see fig. 16–1.)

SITE A–5—CAFEZAL

This site and its excavations have already been described under the Aruã Phase (see pp. 37–38). It was also occupied by the peoples of the Mazagão Phase, their ceramics accounting for 609 or 72.9 percent of the 839 sherds recovered from the site. Of these 50.4 percent were Mazagão Plain, 30.5 percent Vilanova Plain, 15.9 percent Camaipí Plain, 0.4 percent Anauerapucú Incised, 2.6 percent Piçacá Incised. and 0.2 percent Uxy Incised.

SITE A-6—ILHA DAS IGAÇABAS, IGARAPÉ DO LAGO

Halfway between the mouth of the Rio Vilanova and the entrance of its tributary the Rio Piçacá, a second tributary, the Igarapé do Lago, branches off on the north side (fig. 1). Although the mouth is shallow and somewhat hidden by foliage, this stream is the largest and longest that flows into the central part of the Rio Vilanova. In the wintertime the meadows along the stream flood, forming a large *lago* (lake) from which the name derives. The region is well known for sites, having been surveyed in 1896 by Lima Guedes for the Museu Goeldi, and in 1913–16 by Farabee for the University Museum, Philadelphia, Pa. Owing to the illness of the oldest and best guide in the area, we were able to locate only one site in our limited time. Fortunately, this was an occupation site rather than a cemetery, and added considerably to our knowledge of the Mazagão Phase.

About 10 km. northwest of the Fazenda Santa Maria (which is 8 km. upstream from the mouth of the Igarapé do Lago) and 5 km. due west of the *igarapé*, the land rises 25 to 30 meters above the low, flooded meadowland into rolling hills with scattered patches of forest and grassland. The heavy, red soil of the region is highly mineralized, containing large quantities of small iron concretions. A large grove of forest with thick underbrush covers the summit of one of the highest hills in the region (pl. 3, *a*), 30 meters above the river level and 10 meters above the bottom of the nearest ravine. The habitation site was located near the north end of this forest, beginning 20 meters in from the edge, with the sherds extending over an area 75 by 83 meters (fig. 15). All the nearby ravines, 0.5 to 1.0 km. away, contained small springs which flowed the entire year; therefore, the

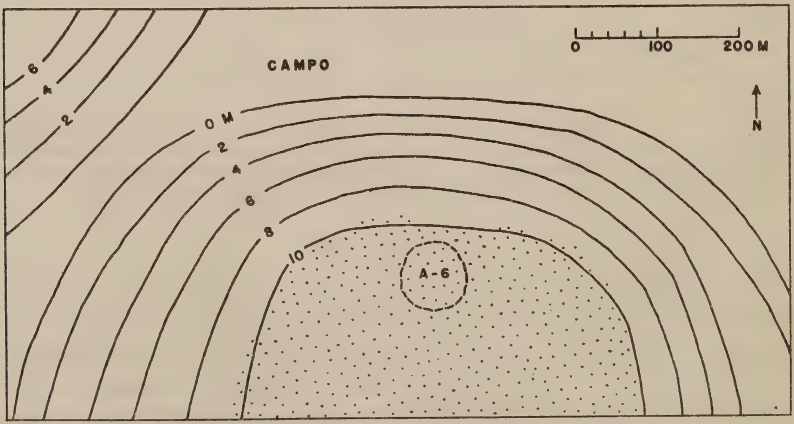


FIGURE 15.—Ground plan of Site A-6—Ilha das Igaçabas, a habitation site of the Mazagão Phase.

occupants of this site were not dependent upon the Igarapé do Lago, 5 km. away, as a source of water. The location of this occupation site, typical of the Mazagão Phase, on top of a high hill would indicate a definite choice of an area easily defended, dry in the flood season, and yet conveniently near the *igarapés* and river for transportation and food. Ilha das Igaçabas was undoubtedly one of the habitation sites associated with the many cemeteries in the region represented by the specimens in the Museu Goeldi in Belém and in the University Museum, Philadelphia.

Although it was named "Ilha das Igaçabas" (Island of the Jars) nothing but sherds had ever been found there by the local *caboclos* who had dug, looking for jars filled with treasure. The sherds were small and sparse, with only a few visible on the surface. The area was widely tested to determine the extent and depth of the deposit. The sherds extended from the surface to a depth of only 10 cm. in a black, clayey, loose soil containing abundant iron-concretion gravel. Below this refuse there was a 5-cm. layer of brown humus and then a sterile orange-red, heavy clay. Because of the shallowness of the refuse deposit and the sparsity of the sherds, a 2 by 2 meter test excavation was made to obtain the largest possible sherd sample. Of the 782 sherds collected 35.8 percent were Mazagão Plain, 27.9 percent Vilanova Plain, 32.4 percent Camaipí Plain, 3.8 percent Uxy Incised, and 0.1 percent Unclassified (pl. 16, *i*).

Nonceramic specimens from the habitation site included: 1 small, rectangular piece of red ochre with one surface polished and slightly convex from use and with the other surfaces irregular (4.0 × 2.5 × 1.9 cm.); 1 lump of white chalk native to the area, with one surface fairly flat and covered with fine use scratches (3.0 × 2.2 × 1.3 cm.); 1 piece of yellow ochre with use scratches and one polished surface, with the rest of the surface area irregular (3.0 × 4.0 × 1.6 cm.); 1 granite hammerstone fragment with the edges roughly rounded by gross percussion chipping, original shape indeterminate but present fragment flattened with a slightly tapered, blunt end showing extensive battering (fragment length 6.5 cm., width 7 cm., thickness 2 to 3 cm.); 1 burnt-clay fragment, and 14 fire-burnt fragments of quartz and iron concretions.

DATA FROM OTHER INVESTIGATIONS

The greater amount of material from the southern part of the Territory of Amapá recorded in the literature, as well as found in museum collections, permits a more detailed comparative study of the Mazagão Phase than of the other Phases. Most of these collections were made in the late 1890's and early 1900's by explorers, travelers, and ethnologists, with the result that much of the information valuable for detailed archeological analyses is lacking. It was possible to supply ceramic details, however, by our extensive examination of the collections of the Museu Goeldi in Belém.

RIO IRATAPURÚ SITES

Evidence from the Rio Jarí drainage is provided by Nimuendajú in his published account (Nimuendajú, 1927, pp. 356–358 and map) and in the collection of 248 sherds that he deposited at the Museu Goeldi. He recorded 5 sites, Novo Anno, Alto Alegre, Bom Destino, São João de Iratapurú, and one unnamed, along the Rio Iratapurú (fig. 1), the first large tributary entering the Rio Jarí from the north. The sites begin about 25 km. from the mouth and extend 10 km. farther upstream in a region of high (230 meters) uplands. Two additional sites, Uxy and Campoeira do Mestre Aprigio, are located on the Igarapé Amazonas (fig. 1), which branches off the Rio Iratapurú just north of the site of Alto Alegre, and whose headwaters join the Rio Maracá drainage. Of the sites themselves, we know nothing beyond Nimuendajú's statement that they consisted of areas of black soil. His brief published description of the ceramics is misleading and would, in the absence of analysis of the sherds, lead to the affiliation of the incised style with Anauerapucú Incised rather than with Uxy Incised.[7]

Analysis of the samples from Alto Alegre, Bom Destino, São João, and Uxy revealed sherds of Uxy Incised, Jarí Scraped, and Mazagão Plain (Appendix, table 1). The frequency of decorated sherds is 45.5 percent or higher, which is far in excess of the proportions derived from our excavations in Mazagão Phase sites. A conscious selection of decorated sherds undoubtedly accounts for this unusually high percentage of decorated sherds and low frequency of plain sherds.

Among the unclassified decorated are two sherds, 1 from Uxy (pl. 16, *f*) and 1 from Bom Destino, representing parts of small faces with applique nubbins and fillets forming the eyes, nose, mouth, and eyebrows. A small human foot (pl. 16, *d*), 7.5 cm. long and 3.6 cm. wide just behind the toes, broken off where it joined the leg, is from São João. One flat sherd (São João) 1 cm. thick is punctured with numerous holes 3 mm. in diameter, arranged 4 to 6 mm. apart in rows (pl. 16, *e*). A rim sherd (São João) is ornamented by thumb-made depressions along the rim edge, applique and a band of incision on the exterior (pl. 16, *a*). A solid, cylindrical object (Bom Destino), 6.5 cm. long and 3.5 cm. in diameter, broken at one end and decorated with crudely incised lines and two small asymmetrically placed bumps, may be a fragment of a figurine. A disk (Bom Destino), unevenly concave on one face and convex on the other, 6.3 cm. in diameter, with a perforation through the center, possibly represents a spindle whorl (pl. 16, *g*).

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[7] This statement, based on a study of the actual sherd material, is in no way intended to condemn Nimuendajú's work or to belittle his aid to an archeological understanding of the Amazon. It is presented merely as a correction of published data. More than once Nimuendajú stated his lack of training in archeological methods and his desire to leave excavation of sites to specialists and for the future when archeological techniques would be improved and perfected. Actually, he is to be commended for his collection of sherds from various parts of the Amazon together with the accurate recording of their provenience—an invaluable aid to the archeological interpretation of this vast unknown area and a service in which too few present-day ethnologists are willing to cooperate.

RIO VILANOVA SITES

The Rio Vilanova (then called the Rio Anauerá-pucú) area was the scene of an expedition from July to September 1896 under the direction of Emilio Goeldi and the field leadership of Aureliano Lima Guedes. The specimens collected, now in the Museu Goeldi in Belém, were carefully studied on the basis of our analysis and classification of the Territory of Amapá ceramic types. Although no field notes exist other than what is contained in Lima Guedes' brief published account with his accompanying map (Guedes, 1897, pp. 55–59), the collection remains one of the best documented from the region. However, either because this map is not as accurate as the ones used today based on aerial photography, or because the local names in the interior frequently change, or because the guides who knew of them had died, many of the sites could not be relocated in 1949. On February 1, 1916, Farabee visited the same region and collected several specimens for the University Museum, Philadelphia. Although his field notes are quite sketchy, the University Museum catalog identifies several specimens as coming from the same large cemetery, Ilha da Canôa, on the Igarapé do Lago do Rio Vilanova, that was excavated by Lima Guedes in 1896. Farabee's (1916 a) description of the site is extremely limited, for his field journal at this point contains more general description of the country than archeology, but a few passages are pertinent:

> Work: Igarapé do Lago, Feb. 1, 1916: The place was out in campo in midst of ant hills and some of pots were buried in these hills which are about 4 feet high and 8 feet across. Many pots have been buried apparently even with the ground. Now their tops extend 3″ to 6″ out of ground and all broken. One was in sight in edge of ant hill. This one had evidently been set in the ground halfway and the ant hill built over it . . . No evidence that hole had been dug into side of ant hill. At another place near there were several bottoms of pots set in ground—tops nearly all gone . . . but no burial in it.
>
> These and others . . . appear to have been set in ground just enough to keep upright. Some evidently had plates over them. . . . The same are reported from Region of Igarapé do Lago and north on east bank of Rio Vilanova for 100 miles. That is in the campo region between Vilanova and Matapy rios.

A study of Farabee's collection from this site supplements our detailed classification made on Lima Guedes' material.

Along the Igarapé do Lago, Lima Guedes found 5 sites, one of which he excavated in search of complete vessels. This site, Ilha da Canôa, was located in an island of forest in the savanna. Although there were many large sherds and broken urns visible on the surface, he excavated three days without obtaining any vessels in an unbroken condition because of the hardness of the ground. Most of the jar fragments still in situ had traces of bone inside and one contained a piece of odoriferous resin, about the size of a hen's egg and commonly called "*cuanuarú*," with the bones (Guedes, 1897, pp. 55–56).

Lima Guedes mentions visiting additional sites on this *igarapé*, called "Ilha das Igaçabas" (our Site A–6), "Ilha das Pombas," and "Tabeleiro do Gentio," but he comments that the material was very decomposed or broken by trees and roots and not worthy of bringing in (op. cit., pp. 48–49). Throughout his report, when he makes this kind of observation, he is undoubtedly dealing with habitation sites (although he calls all sites "*necretorios*" or cemeteries), which produce only scattered, badly broken sherd fragments in comparison to the cemeteries with large numbers of complete or partially complete vessels.

After spending 15 days on the Igarapé do Lago, Lima Guedes explored the upper branches of the Rio Vilanova, especially two sites called, "Vila Nova da Rainha" and "Campos da Rainha." He describes the second site as a "cemetery whose disposition of urns is exactly the same as Marajó" and mentions excavating some of the vessels with great difficulty and carrying them over land back to the river in a sling across a pole (op. cit., p. 58).

In the Museu Goeldi there are 11 complete vessels and miscellaneous fragments labeled as coming from the "Igarapé do Lago do Rio Vila Nova" and from the "Rio Anauerá-pucú" (Vilanova). Unfortunately there is no catalog or other means of identifying which vessels come from which of the two excavated sites, Ilha da Canôa of the Igarapé do Lago, or Campos da Rainha of the Rio Vilanova. Of the specimens preserved in the Museu Goeldi, 4 are Mazagão Plain, 1 Vilanova Plain, 5 Camaipí Plain, and 1 Anauerapucú Incised. A brief description is offered to elaborate the characteristics of the types.

Mazagão Plain Vessels: The surface color is dull, orange-red to orange-brown, smoothed but gritty due to the quartz particles and white mica temper; oxidized firing. One globular-bodied vessel (pl. 9, *b*), 32 cm. in diameter, with a slight, flat pedestal base, and a 14 cm. high neck with an applique of a human face and vertical, notched bars is identical in decorative motif to the large, globular vessel of Burial 5, from Site A–3. Another fragment from a vessel measuring 36 cm. in mouth diameter, body diameter estimated around 50 cm., is a variant of this style, having a face surrounded by an arched applique ornamented with fine punctates. The other two vessels are high-waisted, globular jars with flat bases. Small birds are modeled upon a wide, bulging collar around the neck. On one a single bird with a modeled head is represented (pl. 9, *c*); while the other vessel has two birds with outspread wings produced by low appliques on opposite sides of the neck (pl. 9, *a*).

Vilanova Plain: The only specimen of this ware is a jar with a flat base 12 cm. in diameter, globular body 25 cm. in diameter, with the walls curving inward to a short neck 11 cm. high and a mouth 19 cm. in diameter with a flattened rim thickened externally with a wide coil (pl. 9, *d*). The total height of the vessel is 31 cm. It is typical of Vilanova Plain with light-tan surface color and *cariapé* temper.

Camaipí Plain: The surfaces are well smoothed, with the color ranging from light orange to brownish orange. Temper is a mixture of white quartz particles and *cariapé*. Three vessels have depressed-globular bodies, flat bases, and long, inward-slanting, straight-sided necks ending in flat-topped, externally thickened rims (pl. 8, *a*, *b*). The body diameters are 29, 32, and 43 cm. with the total heights 27, 32, and 44 cm. One tall, badly broken, anthropomorphic vessel with the body oval in cross section is crudely modeled in the form of a seated man (pl. 8, *c*). The face is on the short, straight-sided neck, which ends in a thickened rim with punctates along the exterior surface just below the lip. Several fragments of a large, globular jar with a body diameter of 63 cm., a mouth diameter of 45 cm., and a neck height of 20 cm. indicate that two faces were modeled on opposite sides of the neck. One face is much larger than the other but they are alike in style (pl. 8, *d*). The eyes are formed by applique rings 6 cm. in diameter; the mouth, a narrow, oval applique, is 9 cm. long and 3.2 cm. wide with teeth indicated by vertical incisions; eyebrows, nose, and ears are long, applique fillets, and holes are punched in the ear lobes. The face measures 20 cm. wide and 13 cm. high.

Anauerapucú Incised: There is only one fragment from a large bowl with typical incisions of parallel lines, frets and rectilinear spirals with traces of chalk in the incisions; the typical brick-red color, quartz temper, and sandy paste is representative of the type.

ILHA DO PARÁ SITE

When traveling from the Rio Maracá to the Rio Anauerapucú (Vilanova), Lima Guedes stopped off on the Ilha do Pará, a large island just off the coast between the mouths of the two aforementioned rivers (fig. 1). His description locates the site in the forest on the south-central part of the island where the sherds were scattered over an area 300 meters in diameter, all badly broken and disturbed from the excavations of "treasure" seekers. Although none of the vessels had originally been buried, the mass of sherds was partially covered by debris and trash. He found only one fragment of a ceramic human leg with ligatures and swollen calf, similar to the anthropomorphic urns from the Rio Maracá. All the other vessels and fragments were from the large burial urns shaped like a *jaboty* or land turtle. Fragments of bones were inside some of the unbroken vessels.

From the Lima Guedes expedition there are three complete zoomorphic urns and several zoomorphic head and feet fragments in the Museu Goeldi today. Unfortunately, a few have been mislabeled since they were deposited in 1896 and studied a few years later by Goeldi, so that today two urns carry no information other than "Ilha dos Porcos." This is a recent cataloging error because the finds are clearly identified in Lima Guedes' report (1897, p. 54) as coming from Ilha do Pará, as well as being illustrated with this provenience on the lithographed plates from an unpublished manuscript of Goeldi (MS., Estampa 7). Also, Lima Guedes did not undertake archeology on any island in this area except the Ilha do Pará. A comment by Farabee confirms that the correct provenience of these zoomorphic burial urns is the Ilha do Pará. He visited very briefly both the Ilha do Pará and the Ilha dos Puercos on February 14, 1916, and made the following comment:

> On the Ilha dos Puercos, Island of the Pigs, there are numerous village sites; but apparently, the people removed their dead to a small island nearby called Ilha do Para. On this small island we were unable to find evidence of occupation or village sites . . . [Farabee, 1921, p. 154.]

Farabee's field journal gives a vivid description of the condition of the cemetery:

> The place is 2 or 3 acres in extent and possibly 2 feet higher[8] than the general level of the island and does not flood in rainy season. Now even we waded half knee deep much of the way—only a few hundred yards from the river. Where the pots were found there were [was] no evidence of a village site. I dug in many places but found nothing, not even black earth. The pots had been placed on the top of the ground—now they are sunken to the bodies of the pots. Many not requiring more than to be lifted out without digging—others needed a little digging to free the legs. They had been set two or more side by side—one place I found six in a group, several places two—others where they had been so disturbed it was impossible to tell how many there had been but more than six and less than 12. All of the pots were in the form of some animal with large short legs with from 3–5 toes—head at one end and tail at the other. Many heads appear to have been meant for men's heads but even these have short tails—many may have been tigers. All had fragments of bones inside except when too badly broken to hold them. None had ashes. None had anything else inside. All have had covers over the mouth—These were not plates which had been used for other purposes but apparently were made for pot covers. All pots were near same size, all plain and unpainted.
>
> They are all too small to admit a body entire even if small and demaciated. If bodies had been cut up to enter the pots, the animals and insects would have destroyed the pots to get the remains. The people who would put their dead in urns would not suffer their bodies to be destroyed so I think the bones—dry only—were placed in these pots . . . [Farabee, 1916 a.]

Unfortunately no sherd collections or ceramic observations are available from the Ilha dos Puercos—none were made by Farabee and none exist in the Museu Goeldi. Therefore, it is impossible at this time to verify Farabee's conclusion that the Ilha dos Puercos was the habitation site for the cemetery on Ilha do Pará. The Ilha do Pará zoomorphic vessels have a boxlike, rounded body on four short, stout legs, with the head projected forward on a thick, cylindrical neck (pl. 17). Some also have a short, curved tail. In the middle of the back there is an elliptical opening, 16 by 24 cm., to the hollow interior, over which a flat, oval, disk lid fits. The average body measures 45 cm. in length by 30 cm. in width and 11 to 15 cm. in height. The legs are hollow, 8 to 12 cm. high and 10 to 15 cm. in diameter, and have 4 applique toes along the front of each foot. The face diameter is slightly greater than the hollow neck, 7 to 8 cm. in diameter and 8 cm. long, on which it is supported.

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[8] In the published report, however, he says, "to about 3 feet" (Farabee, 1921, p. 154.)

Although the bodies are similar in shape and proportions, the faces vary considerably in expression. The face on the end of the neck is flattened or slightly convex, and has eyes, nose, mouth, and eyebrows made from applique nubbins and fillets. Along the top or the head, a row of applique knobs form a kind of headdress. Two faces have appendages on the chin similar to the beards found on some of the Rio Maracá anthropomorphic urns. The ceramic type is Vilanova Plain with *cariapé* temper and a light gray-brown to tan surface color. The surfaces are smoothed but uneven and slightly irregular.

These vessels collected by Guedes and Farabee provide the explanation for the large, stumpy, hollow foot found at Site A–3 (fig. 6). Although it is Mazagão Plain and shows slight deviation in the manner of construction of the toes, there can be no doubt that it belonged to one of these zoomorphic urns. Although the emphasis of modeling in this cemetery appears to be centered on the zoomorphic form of the turtle rather than anthropomorphic figures, a few fragments of anthropomorphic, tubular burial urns of the Maracá style were found with these zoomorphic vessels on the Ilha do Pará (Guedes, 1897, p. 54).

RIO MAZAGÃO SITES

Our only information on the drainage of the Rio Mazagão, the short river that flows south to empty into the Amazon slightly north of the halfway point between the Rios Vilanova and Maracá, is also furnished by Lima Guedes and Farabee. In the headwaters of one of its northern tributaries, the Igarapé Frechal, in a region of higher land, Lima Guedes encountered a large cemetery with the jars buried in the ground. He worked there 2 days in order to obtain a few specimens not completely damaged by the roots of the large trees growing on the site. Lima Guedes reports finding a few fragments of tubular anthropomorphic urns and zoomorphic specimens of the Maracá type, but states that the majority were of forms similar to those on Marajó although extremely poor in ornamentation (op. cit., p. 55). Since he makes no reference to painted decoration, it is likely that what he looked upon as Marajó similarities are in reality similarities to vessels of the Mazagão Phase, which are plain or crudely ornamented and often vaguely similar in shape to Marajoara Phase examples. The relative scarcity of anthropomorphic and zoomorphic jars gives the impression that this site, like A–3 and A–4, is basically of the Mazagão

Phase with some Maracá influence. It is unfortunate that the inaccessibility of the site prevented the salvaging of sufficient ceramic material to permit a more definite statement.

In the Rio Mazagão drainage, Farabee visited a different site from the one explored by Lima Guedes. Our efforts to locate any specimens from this area in the University Museum of Philadelphia failed; therefore, quoting directly from Farabee's field journal (MS., 1916 a) gives the full extent of our information:

> Sat. 19th Feb, 1916—Punto das Panellas. Got up at 2:30 for tide and started by canoe with 3 men to Punto das Panellas in Lago do Rio Ajudante an eastern branch of the Rio Mazagão, an hour below the city. Arrived at 8 and went to work.
>
> This P. das P. is a peninsula reaching out a long way into the lake, which is a lake only in the wet season when it is very large, but even then it is so full of grass, rushes and piri that it is difficult to get through with a canoe—must pole with fork. There are islands of high land and other points jutting out into the lake. The burial place is not more than an acre in extent and a foot or two only above high water.
>
> The place has been known for a long time and the neighbors, rubber gatherers, have been going there to dig up water jars and flower pots. The larger pots were originally about level with surface and not difficult to find because if not in sight as many were, they all were covered with other inverted pots and if not broken before they would break with the weight of man walking over and leave hole into the pot.
>
> They in a rude way would attempt to dig them up and if they broke them they left them on surface so now dozens are to be seen on the ground covered with moss among the trees . . . [Here, Farabee diverts into a discussion of "treasure" and a snake guarding a pot full of "treasure" as told by the *caboclos*.]
>
> Instead of money there were a lot of bones and shell teeth beads. Pots 1 and 2.[9] I found an interesting looking fragment half buried with top broken and gone. It had been a man seated on a stool. Inside was smallest pot and a lot of glass beads—some plain round blue, some oblong blue and white and red and white. Pots 3 and 4.[9] By the side of this seated man was Pot 5 with four legs, tail and human face—like ones found on Ilha do Para. This had bones diseased ?; pieces saved. These (Pots) 3–5 belonged together no doubt. We spent 3 days digging with four men and found a number of small pots and fragments. One in form of jaboty [tortoise]—head and tail—a number of faces and heads of men and animals. These had no important relation the one to the other because of former digging. . . .
>
> In only one of many we dug up were glass beads and these in the most important burial of all. These rubber men were looking for gold so took everything out of scores of pots but they never found glass beads—they might easily have missed seeing bone and shell and teeth beads but glass ones are so noticeable they must have seen them if there were any.

Farabee's description of the ceramics leads one to the conclusion that the Punto das Panellas site is related to the pottery from the Ilha do Pará and probably represents the same cultural fusion of the Mazagão Phase with the Maracá tradition.

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[9] No map or sketch accompanies the text or notes.

IGARAPÉ DO URUBÚ SITES

On the Igarapé do Urubú, which flows southeast to empty into the same mouth as the Rio Maracá, Lima Guedes (1897, pp. 54–55) heard of a site. Being unable to go himself, he sent four of his men to investigate it. They reported that they made various tests in the ground but found only sherds of vessels without any decoration. Since no anthropomorphic or zoomorphic urns were reported, in all likelihood this was a habitation site.

RIO MARACÁ SITES

The area best known from an archeological standpoint in the Territory of Amapá prior to 1949 was the Rio Maracá. It was visited and excavated by Ferreira Penna in 1871, Lima Guedes in 1896, Farabee in 1916, and Nimuendajú in 1927. Specimens occur in many museums throughout the world, but the largest and best documented collection, the one made by Lima Guedes, has remained in the Museu Goeldi. His field observations (op. cit. pp. 43–47; 49–53) supplemented by our detailed examination of the specimens show the tradition to be deviant from the Mazagão Phase otherwise characteristic of the southern part of the Territory of Amapá.

The cemeteries excavated by Lima Guedes are on branches of the upper Igarapé do Lago, a large tributary entering the right bank of the Rio Maracá some distance above its mouth. This is a region of many hills and rocky outcrops, providing numerous small caves and niches, which were used for burial. The Ilha do Cunhahy, located on an *igarapé* of the same name 20 km. north of its junction with the Igarapé do Lago do Maracá, is one such spot. At various heights in a vertical outcrop 300 meters long and about 8 meters high along the southwest edge of the island were four small niches, all of which had been used for burial. Lima Guedes found a quantity of fragments of tubular, anthropomorphic urns in the form of a human being seated on a bench and one zoomorphic urn in the form of a turtle. It was in this same cave that he found fragments of bone in at least one of the jars and an almost complete skull on the floor. Since the skull is in rather good condition and the painted jar does not conform to the typical pattern of any archeological pottery in the Territory of Amapá, these were probably placed in the cave at a more recent date than the anthropomorphic urn burials.

On the left bank of the Igarapé Rio Branco, which flows into the Igarapé do Lago do Maracá from the south, at a spot called "Ilha da Terrapreta," Lima Guedes found three more caves, two on the south and one on the east side of the hill. Falling rocks and prowling animals had broken many of the vessels and buried others up to the rim. They were in the cylindrical, anthropomorphic style like those at the preceding site, and each cave had several of the zoomorphic (mostly turtle) style of urn. A significant find, indicating a post-Columbian date, was one tubular, anthropomorphic burial urn with glass beads ornamenting its arms and spine (pl. 18, *b*).

A third site was on a steep-sided hill rising some 18 meters on the right bank of the Igarapé do Lago do Maracá about a mile above its juncture with the Igarapé Rio Branco. This hill was called "Ilha da Fortaleza" because of a trench along the edge of the flat summit. Although the local inhabitants attributed its construction to the Dutch, Lima Guedes thought this out-of-the-way location and the fact that the adjoining cemetery was undisturbed until recently, argued for Indian origin. The cemetery occupied the summit of the hill and was extensive, but all the jars had been recently broken by a disgruntled treasure seeker. His examination showed the vessels to be identical to the zoomorphic and tubular anthropomorphic burial urns he found at the Ilha do Cunhahy. Here, he also found five stone axes.

Farabee's account (MS., 1916 a) of his visit to the Igarapé do Lago of the Rio Maracá on February 29, 1916, is not explicit, but the presence of several complete jars indicates that this is not one of the sites visited by Lima Guedes:

> This cave under a shelving sand rock was at head of a now dry stream but later water runs from under the rock. The cave is 3′ high in front, in center sloping back to nearly nothing at 10′ deep and 60′ long. Originally there had been many burial jars in shape of seated men sitting together under the rock but no doubt animals knocked down many of them and also men looking for treasure had broken all the large ones. Fragments only were left scattered but we collected five heads, 3 figures and some pieces. Also got one skull but no long bones had been preserved.
>
> At the back of the cave there were a number of rudely outlined heads in red and white paint. Some were all red, others outline red with eyes, mouth and nose in white. Some were small, 6″ across, others double that size. All were meant to be round heads but the surface was irregular so many have corners on one side or other—Some had red lines but white eyes inside the red circles. Nothing but heads can now be made out and these are so covered by the ants [termite tunnels] that no entire figures can be seen.

Our analysis of the Museu Goeldi collection, numbering 29 anthropomorphic lids (heads) and 17 bodies seated upon benches, produced detailed information on the ceramic types. The poorly mixed paste contains a variety of tempering materials, ranging from small black ash particles in a clayey paste to a moderately sandy paste with fine sand particles (not ground quartz) and occasional specks of black ash intermixed. Only one vessel shows traces of mica. Although Hartt (1885, p. 40) states that *cariapé* does not appear to have been used, a hand-lens examination shows some fine, black ash and *cariapé* present in the majority of the vessels. Since one or two vessels lack these black ash particles, an analysis based on a limited number of specimens might lead to a different description of the temper. Surface color is an even tan to orange brown, produced in an oxidizing atmosphere, with only occasional fire clouding. Firing was sufficiently complete to penetrate the walls in only 25 percent of the vessels; in the remaining 75 percent a gray core remains. These features set the pottery apart from that of the Mazagão Phase and require its classification as distinct from the described pottery types of the Territory of Amapá. Since the Maracá style collections were restricted to a limited number of burial urns without the benefit of a large sherd sample from habitation sites, a new pottery type has not been established at this time.

In form and decoration the contrast with the Mazagão Phase is sharper still. The most abundant and characteristic vessel is the cylindrical-bodied, anthropomorphic figure seated on a bench, forming the jar body, with a removable head forming the lid (pl. 18). Except for variation in size and proportion, the bodies show a uniformity in execution. The cylindrical torso is fixed to the top of the low bench, which has two legs running from end to end. Occasionally, a zoomorphic head and tail are added to opposite ends of the bench. The legs, attached to the torso several centimeters above its base, slant downward at an angle of 30 to 40 degrees to join the short lower leg with its bulbous calf. The flattened feet rest upon the ground. The arms join the torso a little below the upper edge or rim and are spaced the same distance apart as the legs. The upper arm slants downward at the same angle as the upper leg and the lower arm rises vertically to join it, making the elbow bend upward. The two arm segments are approximately equal in length and the hands rest upon the knees. The genitalia of both female and male are realistically modeled, and, in the case of the male, several indicate the practice of circumcision. Small nubbins represent the breasts and a small pit, the navel. Some of the figures also have nubbins at the elbows, wrists, and ankles, which appear to be attempts to show the prominent bones at those places. Most of the figures wear one or a pair of bracelets on the wrist and on the upper arm. Many have a curved applique fillet between, or just above, the arm attachment similar to the curve assumed by a necklace.

The heads fall into three basic styles (pl. 19): (1) A straight-sided, truncated cone with a flat disk top; (2) a domelike shape with a rounded top and curving sides; and (3) a small rounded head with a flat top, constricted neck, and shoulders which widen out to the diameter of the jar mouth. The first group is the largest and most conventionalized; the third, the rarest and the most naturalistic. In all three, the features are formed by appliques, sometimes supplemented with incising on the eyes and mouth. A long fillet runs across the forehead down both sides and ends in a short curve or lateral extension. The long vertical nose is often joined to this at its root. About half of the heads with flattened tops (forms 1 and 3) have this area covered with short, conical nubbins arranged haphazardly or in rows. The tops of two heads are decorated with incised lines. A typical feature of form 2 is a bunlike projection from the upper part of the back of the head, although this is sometimes also found on form 1. Form 3 is set apart not only by its naturalism but by the fact that each of the five examples in the Museu Goeldi collection and the one specimen in the University Museum collection (Farabee, 1921, fig. 44) have a slight protrusion running along the chin that suggests a beard. The fact that glass beads have been found associated with the Maracá urns makes it seem probable that the beards were fashioned after European models and provides a lead for a possible time distinction in the three head styles.

About half of the jars are painted a solid black, yellow, or red over which parallel-line and spiral designs in white or black were sometimes added.

Many of the vessels were so badly broken that the contents had been lost; however, several of the specimens in the Museu Goeldi were still filled with cremated bones. Ferreira Penna (1879 b, pp. 50–51) states that the urns contained complete skeletons, disarticulated, with the pelvis at the bottom, the other bones along the sides, and the skull on top. Although the evidence is in part contradictory, it appears that both cremation and secondary burial were associated with tubular, anthropomorphic urns.

Although our assessment of this Maracá tradition cannot be complete until something is known of the habitation sites belonging to it, the ceramic type and the burial pattern are distinct from those of the Mazagão Phase. It appears to be concentrated geographically in the Igarapé do Lago region of the Rio Maracá with a limited spill-over on the Ilha do Pará and to have been contemporary with the latter part of the Mazagão Phase, upon which the Maracá tradition exerted a minor influence as evidenced from certain burial-urn styles found at Sites A–3 and A–4, on the Rio Piçacá.

ANALYSIS OF MATERIALS OF THE MAZAGÃO PHASE

Pottery Type Descriptions

All the sherds and vessels obtained in our excavations (5,126 sherds and 16 vessels), plus those specimens examined in various museum collections, were classified into pottery types using the currently accepted, binomial system of nomenclature, in which the first word refers to a local geographical name and the second is descriptive. The detailed pottery type descriptions, arranged in alphabetical order, follow:

ANAUERAPUCÚ INCISED

Paste and surfaces: This decorated type is on Mazagão Plain material; see that type description for details of temper, surface, firing, and color.

Forms:

Common vessel shapes:

1. Pedestal basin used as a lid on burial urns (fig. 16–1).

   Rims: Rim of the basin is generally thickened on the interior with a wide flange, 2.5–3.0 cm., upon which the incisions are placed. The rims of many have small adornos or lobes varying in length from 4–12 cm. and extending 1.0–1.2 cm. beyond the rim edge, which is rounded. Rim of the pedestal base is flat topped or rounded with a slight external thickening, measuring 1.0–1.3 cm.

   Body wall thickness: Basin, 8 mm.; pedestal, 9 mm.

   Body dimensions: Basin mouth diameter, 36–40 cm.; with the bowl depth 10–12 cm. Total height of the vessel 20–22 cm.

   Base: Tall, cylindrical pedestal with a slight outflare, open at the bottom. Base diameter 20–22 cm. and 18 cm. at the point of attachment with a height of 12 cm.

   Decoration: Basin—Panels of incised horizontal lines with diagonal and squared spirals along the inner lip of the rim, separated on some by human faces modeled in applique. Many basins have

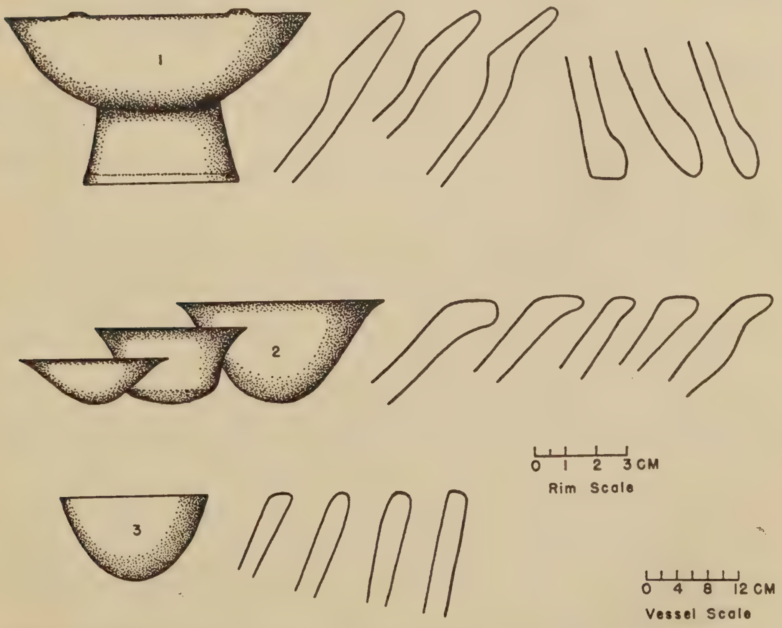

Figure 16.—Rim profiles and vessel shapes of Anauerapucú Incised, Mazagão Phase (Appendix, table 2).

no decoration of the exterior, but a few have parallel, incised lines without diagonals, rectilinear spirals, etc.

Pedestal—Exterior is incised in a paneled band, 4–6 cm. wide, beginning just below the thickened lower rim, with the typical motifs.

2. Bowls with everted, exteriorly thickened or direct rims (fig. 16–2).
   Rims: Everted with a wide, flat surface and a round lip; externally thickened, ranging from 1.0–1.5 cm. in thickness; sometimes direct.
   Body wall thickness: 8–10 mm.
   Body dimensions: Height 6–15 cm.; mouth diameter 20–26 cm.
   Base: Rounded.
   Decoration: Horizontal, parallel lines limited to the flat, upper surface of the flanged rim; an occasional incised line on the exterior below the rim.
3. Small, open, sometimes carinated, bowls with direct rims (fig. 16–3).
   Rims: Direct rim with either rounded or flattened lip, mouth diameters ranging from 14–26 cm.
   Body wall thickness: 5 mm.
   Body dimensions: Height 10–15 cm.
   Base: Rounded.
   Decoration: Incisions limited to the upper portion of the exterior walls of bowl, just below the lip in a panel averaging 2 cm. wide.

Less common shape:

1. Small carinated bowl with inslanted rim and a strap handle (pl. 7, *d*).
   Rim: Inslanted, rounded lip; mouth diameter 9 cm.
   Body wall thickness: 5–6 mm.
   Body dimensions: Diameter 13.5 cm.; height 5.6 cm.
   Base: Slightly flattened.
   Appendage: A single, strap handle with a slight groove down the center, 1.5 cm. wide, and attached from the lip edge to the shoulder.
   Decoration: Rectilinear, squared spirals between pairs of straight lines on the insloping wall of the bowl.

DECORATION (pl. 11):

Technique: Fine-line, sharp, moderately deep incisions on inner lips of bowls or on the exterior walls of the pedestal bases or on small bowls ranging in technique from carefully executed incisions to a few crude specimens, but always done with greater care than Uxy Incised. Many lines are so straight and accurately drawn that they appear as if drawn with a straight edge. Seventy-five percent of the precise, well-executed incisions are filled with white chalk (a type found in natural outcrops in the region), with faint traces often suggesting a more widespread usage than the badly eroded sherd material indicates. The depth of the incisions before filling with chalk ranges from 1–2 mm. with the width from 0.5–1.0 mm.

Motif: Typically horizontal, parallel and diagonal lines, evenly spaced in combination with frets, rectilinear and squared spirals. Curved lines are rare. The designs are all well spaced and regular and commonly arranged in panels (fig. 14, *b*, and pl. 11). A few forms combine a crude applique modeling of human faces on rim lobes with panels of elaborate incision in between (fig. 14, *a*).

TEMPORAL DIFFERENCES WITHIN THE TYPE: The rim and vessel form analysis (Appendix, table 2) suggests a decline in popularity of the pedestal basins (form 1) in the cemeteries in favor of an increase of smaller open bowls without a pedestal (form 2). The pedestal basin form 1 does not appear until the middle of the Mazagão Phase sequence.

CHRONOLOGICAL POSITION OF THE TYPE: Appears only in the upper (late) part of the Mazagão Phase sequence.

CAMAIPÍ PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: Cariapé (ash of siliceous bark) and finely ground quartz particles. An explanation of *cariapé* temper is best given by a direct quotation: "Usually it is said that the bark is taken from the *cariapé* tree. This name seems to me to be a common designation for various plants, such as, for example, Bignoniacea, the genera Moquilea and Licania utilis, Turiuva, etc. Unfortunately, our sources are not explicit concerning the species of the tree in question. . . ." (Linné, 1931, pp. 206–207). "The bark is burnt, whereupon it is ground and mixed with the clay. The burning is done for the purpose of removing the organic components which otherwise would lessen the durability of the vessels in the firing" (Linné, 1925, p. 38). The quartz is less than 5 percent of the mixture, but is definitely a conscious mixture and not merely due to a naturally sandy clay. All the quartz particles are quite granular and sharp, indicating the deliberate crushing and intermixing, rather than waterworn sand. *Cariapé* and quartz make the paste gritty. It is also very porous and has numerous black spots from the burnt ash; the siliceous particles from *cariapé* are white, columnar, and cellular as viewed under the microscope.

Texture: Fine, sandy, gritty. Halfway between Vilanova and Mazagão Plain in paste and texture.

Color: Majority of all sherds have a gray core flecked with black and white particles of *cariapé* and are bordered on the exterior and interior with a thin band of gray tan or orange tan. Rest have a solid gray-orange color.

Firing: Oxidizing fire with 75 percent of the sherds incompletely fired; fire clouds rare.

SURFACES:

Color: Exterior and interior—Generally, both surfaces are the same, ranging from a dull gray brown to a light gray to a tile orange. The majority are gray orange or tile orange. Less than 1 percent are gray brown on the interior with a bright-orange exterior.

Treatment:

Exterior—Well-smoothed, even, with smoothing striations visible in most cases. Thirty-five percent with a very slick, even surface but not highly polished with a luster. All coils erased.

Interior—Typically, the same treatment as the exterior; however, 25 percent are slightly rougher and less well smoothed. One percent have a slick, gray-brown interior.

Hardness: 2–2.5.

FORM:

Common vessel shapes:

1. Globular jars with short neck and vertical or everted rim (fig. 17–1; pl. 8, *a*, *b*, *d*).

   Rim: Vertical or everted, unthickened or externally thickened usually with a flat or sloping flange, and rounded lip.

   Body wall thickness: 6–11 mm.; majority 8 mm.

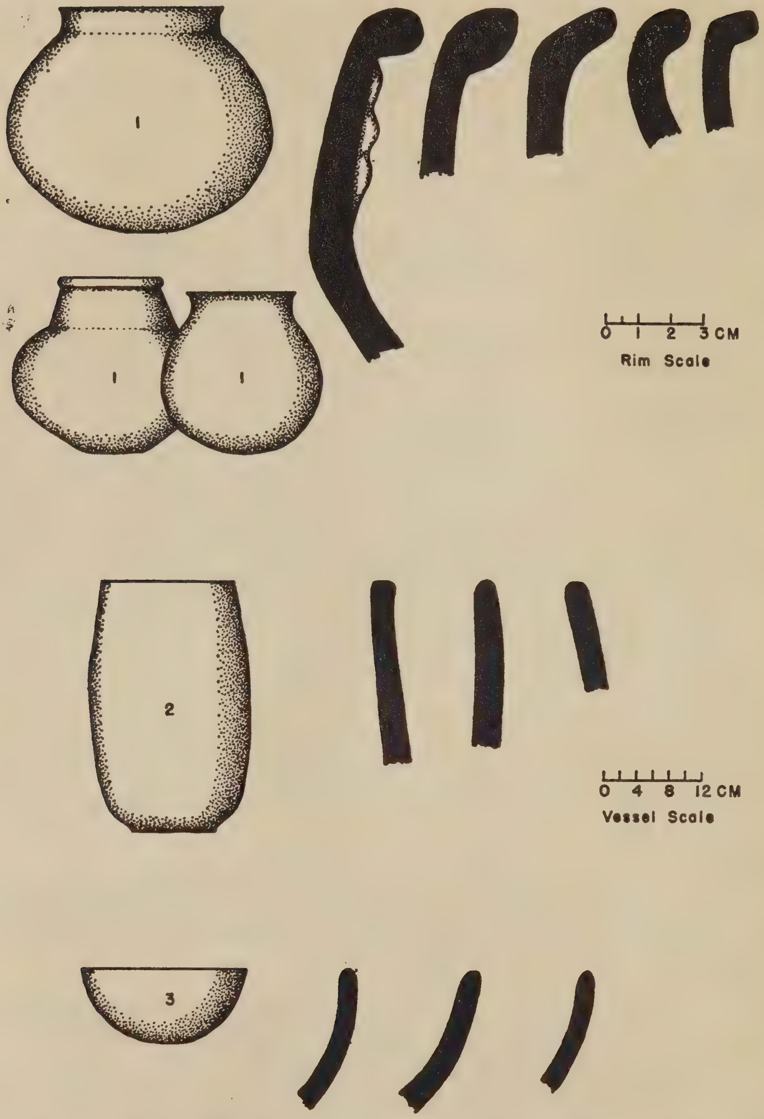

Figure 17.—Rim profiles and vessel shapes of Camaipí Plain, Mazagão Phase (Appendix, table 3).

Body dimensions: Diameters 32–40 cm.; majority 32–36 cm.

Base: Slightly flattened; a few rounded.

Appendages: Occasionally, a small, irregular loop handle from the lip downward to the neck of the jar; cross section is oval to round, measuring 8–10 mm. Diameter of loop handle ranges from 2–4 cm.

2. Cylindrical jars (fig. 17–2; pl. 8, *c*).
    Rim: Direct rim; lip is rounded or squared with rounded corners.
    Body wall thickness: 6–10 mm.
    Body diameters: Usually 18–25 cm.
    Base: Flattened; usually a slight pedestal 0.5–1.0 cm. tall, diameter 8–14 cm.
3. Open bowls with outcurving or slightly incurving sides (fig. 17–3).
    Rim: Rounded or square with rounded edges; occasionally exteriorly thickened. Mouth diameters 20–40 cm.; majority 24–32 cm.
    Body wall thickness: 4–10 mm.; majority 6–8 mm.
    Base: Rounded or flat.

TEMPORAL DIFFERENCES WITHIN THE TYPE: In habitation sites the globular jar with a short to medium neck (form 1) tends to decrease in popularity while open bowls with outcurved sidewalls (form 3) increase (see Appendix, table 3). At the point of time in the sequence where Camaipí Plain appears in highest percentage (i. e., Site A–6) form 1 is as high as 71.5 percent of all vessel forms. The tall, cylindrical jars (form 2) do not appear until the middle-upper part of the Mazagão Phase sequence.

CHRONOLOGICAL POSITION OF THE TYPE: The type was introduced in the early part of the Mazagão Phase when the differentiation of paste between sand and *cariapé*-tempered pottery was not too clear and the firing was not too well-controlled; then as the pottery tends to crystalize into Mazagão Plain and Vilanova Plain, Camaipí Plain decreases in popularity.

JARÍ SCRAPED

PASTE:

Method of manufacture: Coiling.
Temper: Crushed quartz particles, generally finely ground.
Texture: Coarse, gritty, friable, irregular fracture. Very uneven mixture of temper throughout the paste.
Color: Dull orange to rusty brown.
Firing: Oxidizing fire; generally complete; no fire clouds.

SURFACES:

Color: Dull, gray tan to dusty brown.
Treatment: Exterior and interior—All coiling lines erased, smoothed, but slightly irregular and uneven. A few show the smoothing striations on the surfaces.
Hardness: Sand temper gives an abnormal hardness, for the sand particles protrude; actually the paste is fairly soft (2.5).

FORMS:

Common vessel shapes:

1. Small bowls (fig. 18–1).
    Rims: Rounded lip with slightly everted rim or rounded direct rim, both with incurved sidewalls.
    Body wall thickness: 5 mm.
    Base: No sherds found; probably same as Mazagão Plain form 4, i. e., round or flat.
    Body dimensions: Maximum bowl diameter is 2–4 cm. greater than the mouth, which is 12–15 cm.
    Decoration: Scraped in a series of parallel lines, diagonal units or curvilinear elements on the exterior

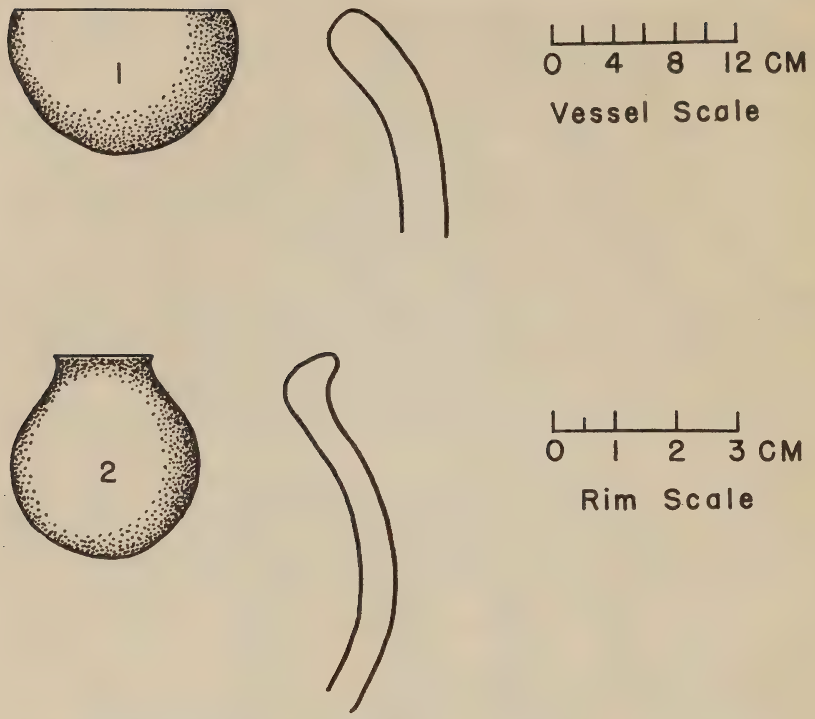

FIGURE 18.—Rim profiles and vessel shapes of Jarí Scraped, Mazagão Phase (Appendix, table 4).

2. Small jar with everted rim (fig. 18–2).
   - *Rim:* Slightly thickened on the interior, everted; thin, tapered and rounded lip. Mouth diameter 8 cm.
   - *Body wall thickness:* 6 mm.
   - *Body diameter:* 12–14 cm.
   - *Base:* No sherds found.
   - *Decoration:* Exterior scraped in a series of parallel lines, diagonal units or curvilinear elements, sometimes with applique nubbins on jar shoulder.

DECORATION (pl. 15, *b–g*):

Technique: Exterior is lightly scraped with a narrow (3 mm.), flat, blunt tool, with the scrapings spaced 3–5 mm. apart, each line separately applied, but sometimes overlapping.

Motif: A series of parallel lines, diagonal units or curvilinear elements.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None observable in the small sample (Appendix, table 4).

CHRONOLOGICAL POSITION OF THE TYPE: An early pottery type, limited to the lower part of the Mazagão Phase sequence.

MAZAGÃO PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: White mica particles (muscovite) and ground quartz, ranging from fine particles to large angular chunks, sometimes 1.5 cm. long (pl. 10).

Texture: The naturally gritty clay, coupled with the quartz, mica temper makes a very coarse, friable and irregularly fractured paste. All the sherds have a hollow, high-pitched ring, like bricks. The poor mixture of quartz hunks often makes weak zones which fracture easily.

Color: Ranges from a light, tile orange to a light, brick red; 25 percent of the sherds have a thin gray core bordered with bands 2–3 mm. wide of orange or light brown.

Firing: Oxidized fire, generally complete; few fire clouds.

SURFACES:

Color:

Exterior—Ranges from brick red to an orange red, to a brown or a light orange tan to a rusty brown; the majority are a dull, brick red.

Interior—Identical in range to the exterior, except that 1 percent of the sherds are a gray black and slick as if rubbed with *jutahy* resin before firing.

Treatment:

Exterior—Well-smoothed, even and fairly regular surfaces with all the coiling lines erased. Fifty percent of the sherds show distinct smoothing striations. A few have a filmy surface finish developed from smoothing by hand when the clay is very wet. A small percent of the sherds have a slick exterior as if polished when leather hard.

Interior—Identical treatment to that of the exterior is typical. Occasionally the interior is slightly more irregular and rough compared to the exterior. One percent of the sherds are well polished and slick.

Hardness: Sand and quartz particles make it seem harder; actually 2.5.

FORM:

Common vessel shapes:

1. Round-bodied jar with thickened and everted rim and a short insloping to outsloping neck (fig. 19–1; pl. 9, *a–c*).

   Rim: Exterior rim thickening in the form of an added strip or coil varies the profile from a rounded to a flat top with squared edges. Mouth diameter, 15–36 cm.

   Body wall thickness: 4–11 mm. with 25 percent of all sherds a heavy, coarse variety ranging from 1.2–2.2 cm. Majority 7–8 mm.

   Body diameters: 25–50 cm.; neck height 3–12 cm.; total height 20–45 cm.

   Base: Slightly thickened; round or flattened. Flat the most typical. 14–16 cm. in diameter.

   Appendages: Handles not typical but sometimes a short, strap handle extends from the lip to the jar neck.

   Occasional decoration: Applique fillets, nubbins, vertical and horizontal bars with occasional light incision on the appliques form human faces on the lids or necks of jars; sometimes bird or animal head adornos on jar collars; 10 percent of the large jars have such ornamentation.

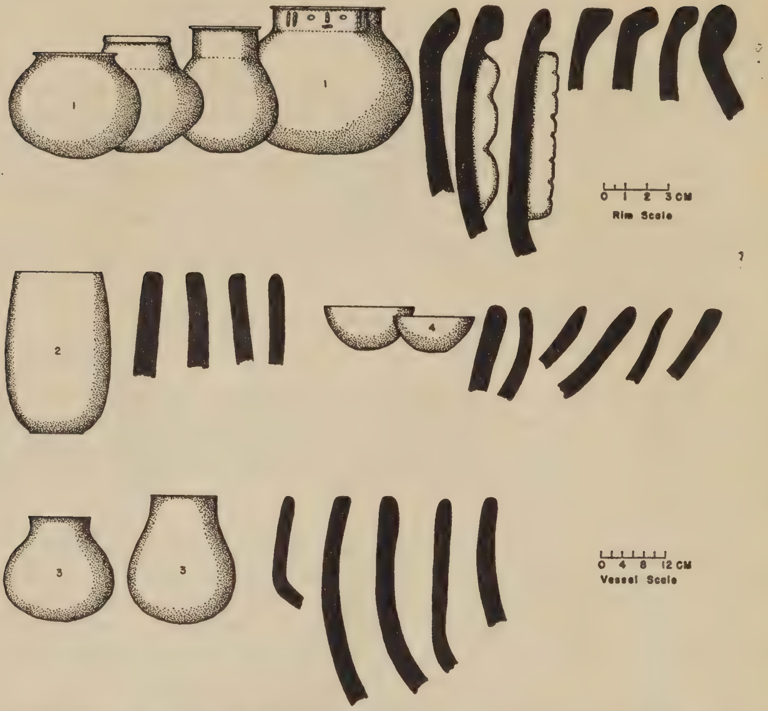

Figure 19.—Rim profiles and vessel shapes of Mazagão Plain, Mazagão Phase (Appendix, table 5).

2. Tall, cylindrical jars with short pedestal bases and direct rims (fig. 19–2).
   Rim: Direct, flat-topped and square with slightly rounded edges; mouth diameter 16–22 cm.
   Body wall thickness: 4–11 mm.; majority 7–8 mm.
   Body dimensions: 18–26 cm.; height 35–40 cm.
   Base: Flat, short pedestal; 0.5–1.5 cm. high, 10–15 cm. in diameter.
3. Round-bodied jar with unthickened rim and vertical or outsloping neck (fig. 19–3).
   Rim: Direct; lip rounded or square with rounded edges; mouth diameter 16–30 cm.; neck 3–12 cm.
   Body wall thickness: 4–11 mm.; majority 7–8 mm.
   Body diameters: 25–50 cm.
   Base: Slightly thickened, rounded or flattened; flat base usually 14–16 cm. in diameter.
   Appendages: Rarely, a short strap handle extends from the lip to a few centimeters on the jar neck.
4. Small, open bowl with gently curved sidewalls (fig. 19–4; pl. 7, *c*).
   Rim: Rounded, sometimes squared with rounded edges, or tapered or with a slight thickening on the interior; mouth diameters 18–36 cm.
   Body wall thickness: 4–11 mm.; majority 7–8 mm.
   Base: Rounded or flat.

Rare vessel shapes:

1. Anthropomorphic figure seated on a clay bench (after the Maracá urn style).
2. Flat-topped lid with a short annular neck. Found only at sites along the Igarapé Muriaca on the Rio Iratapurú. See Uxy Incised—form 2 for details.

Temporal differences within the type: A steady decline in popularity of the large globular to round-bodied jars with short to medium necks and thickened rims (form 1) from 80 percent to 20 percent in the habitation sites (see Appendix, table 5) with a slight increase in small to medium round-bodied jars with vertical to outsloping necks and unthickened rims (form 3) from the lower (earliest) to upper (late) part of the Mazagão Phase sequence. The early varieties of Mazagão Plain tend to be a grayish brown (cf. Site A–6) while the late varieties of Mazagão Plain (cf. Sites A–2 and A–1) are a bright red to brown red. Anthropomorphic and applique features on the neck are more common in the later part of the Phase. The tall, cylindrical jars (form 2) do not appear until the middle to upper part of the Mazagão Phase sequence.

Chronological position of the type: Decreases in popularity during the Mazagão Phase, but is present throughout the entire time span of the Phase.

PIÇACÁ INCISED

Paste and surface: This incised variety occurs typically on Vilanova Plain paste, occasionally a few decorated sherds are on Camaipí Plain; see those pottery type descriptions for details of paste, temper, color, etc.

Forms:

Common vessel shapes:

1. Open bowls with direct rims and outcurving sides, sometimes carinated (fig. 20–1).
   - *Rims:* Direct, slightly rounded or tapered; rarely thickened.
   - *Body wall thickness:* 6–10 mm.; majority 8 mm.
   - *Body dimensions:* Mouth diameters 18–34 cm.; height 12–20 cm.
   - *Base:* Usually rounded.
   - *Decoration:* Incision is usually limited to a band, 1–2 cm. wide, of horizontal, parallel lines extending from 1 cm. below the rim and found only on the exterior. Motifs limited to wide panels of diagonal lines or rectilinear meander and parallel bands bordered by a row of punctates. A combination of punctates bordering or interspersed with parallel lines often appears on the inner lip, especially with the punctates around the lip edge.
2. Pedestal-basin lids (fig. 20–2).
   - *Rims:* Beveled with an outflaring, rounded lip on the basins. The pedestal base is rounded with the exterior thickened with a smoothed-over coil.
   - *Body wall thickness:* Basin 8 mm; pedestal 10 mm.
   - *Body dimensions:* Basin mouth diameter 32–38 cm.; basin height 10–12 cm.; base diameter 25 cm. with a height of 9–10 cm.
   - *Base:* Pedestal type, which is a tall, cylindrical collar attached to the bottom of the bowl.
   - *Decoration:* Basin—Interior and exterior of the beveled rim is incised with horizontal, parallel lines as on the smaller bowls. Pedestal base—Usually the pedestal is incised with 8 parallel lines in a band 2 cm. wide bordered with deep, sharp, circular

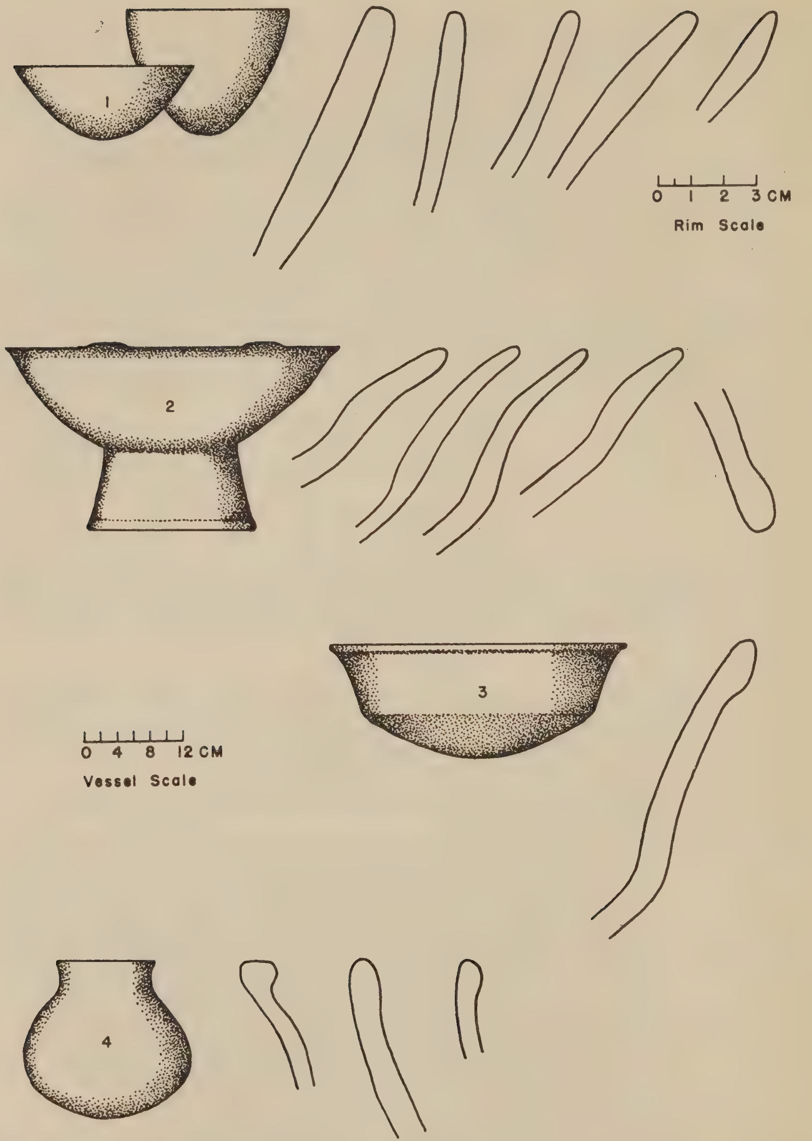
1
0 1 2 3 CM
Rim Scale
2
3
0 4 8 12 CM
Vessel Scale
4

Figure 20.—Rim profiles and vessel shapes of Piçacá Incised, Mazagão Phase (Appendix, table 6).

punctations (2 mm. in diameter) in a slightly wavy line around the upper edge of the incisions.

3. Open, carinated bowls (fig. 20–3).
   Rims: Exteriorly thickened, outcurving, rounded lip; mouth diameter 36 cm.

Body wall thickness: 8 mm.

Body dimensions: Body diameter 30 cm.; estimated height 14 cm.

Base: Rounded.

Decoration: Parallel lines and rectangular units in a band on the carinated exterior sidewall.

4. Small jars with short neck and slightly outcurved rim (fig. 20–4).

Rims: Outcurved, slightly thickened on the exterior, lip rounded or squared with rounded edges; mouth diameter 12–18 cm.

Body wall thickness: 6–10 mm.; majority 7 mm.

Body dimensions: Body diameter 16–26 cm.; height 14–20 cm.

Base: Rounded.

Decoration: Parallel lines around the neck, sometimes with punctates on the lip.

DECORATION (pl. 12):

Technique: Sharp incised lines, very straight and well executed, evenly spaced and 0.5–1.0 mm. wide with an average depth of 1 mm. Chalk-filled incisions like those of Anauerapucú Incised are very rare.

Motif: Parallel lines, rectilinear meander and horizontal lines with an occasional use of diagonal lines. No use of the squared spiral so typical of Anauerapucú Incised. A limited use of light circular punctates bordering the incised units. Three to five parallel lines are the most common combination.

TEMPORAL DIFFERENCE WITHIN THE TYPE: The pedestal-basin lid (form 2) appears in the middle-late part of the Mazagão Phase sequence; no other form trends are evident (see Appendix, table 6).

CHRONOLOGICAL POSITION OF THE TYPE: It is contemporaneous with Anauerapucú Incised, that is, the upper (late) part of the Mazagão Phase sequence, increasing slightly in popularity throughout time.

UXY INCISED

PASTE:

Method of manufacture: Coiling.

Temper: Quartz and mica the most typical with about 25 percent of the sherds with only quartz particles; temper fairly well mixed in the paste.

Texture: Sandy, gritty, friable with an irregular fracture.

Color: Dull gray orange to rusty brown with a few sherds showing a thin gray core bordered by light orange.

Firing: Incompletely oxidized.

SURFACES:

Color: Exterior and interior—Dull gray tan to dusty brown or rusty orange.

Treatment: Smoothed but irregular and uneven, very porous and rough and gritty.

Hardness: 3.

FORM:

Common vessel shapes:

1. Carinated or slightly carinated bowl (fig. 21–1).

Rims: The most common form is slightly everted, thickened on the interior and gently curving outward with a rounded or tapered lip. This rim is 1–3 cm. long and forms a rather pronounced angle at the shoulder where it joins the bowl. Less commonly the rim is either rounded, unthickened and outcurving or everted and thickened externally with a flat top (flange) measuring 1.0–1.8 cm. wide.

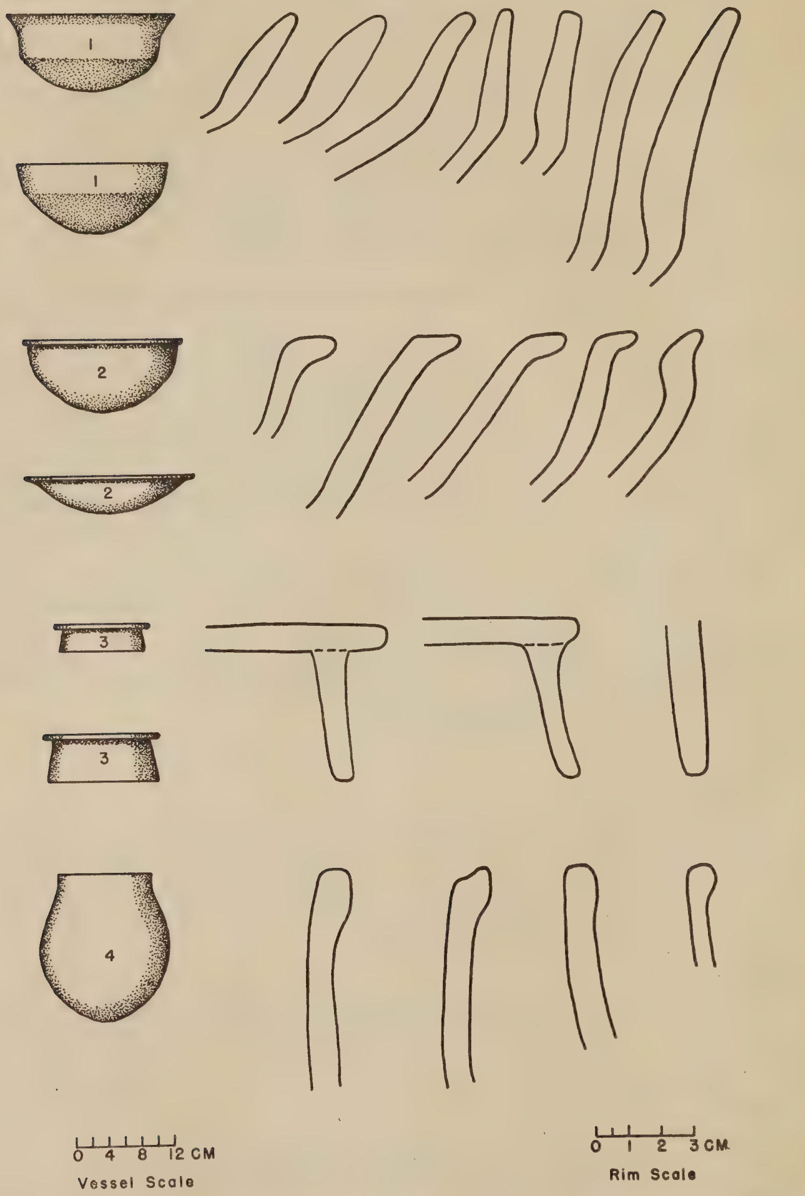
1
1
2
2
3
3
4
0 4 8 12 CM
Vessel Scale
0 1 2 3 CM
Rim Scale

Figure 21.—Rim profiles and vessel shapes of Uxy Incised, Mazagão Phase (Appendix, table 7).

Body wall thickness: 6–9 mm.
Body dimensions: Mouth diameters range from 18–38 cm.; majority 22–26 cm.; bowl depths 5–15 cm.

Base: Rounded.

Decoration: A few specimens have a series of wavy lines on the inner lip; however, the typical design is limited to the exterior surface from the shoulder to the rim in a band from 2–5 cm. wide.

2. Shallow bowl with flat-topped, everted rim (fig. 21–2).

Rims: Flat top (flange) 1.0–1.5 cm. wide, everted rim with rounded lip, sometimes slightly tapered. Mouth diameter 22–26 cm.

Body wall thickness: 6–9 mm.

Base: Rounded.

Decoration: Same as for form 1 with incisions sometimes on the flat top (flange) of the rim.

3. Flat lid with short, annular base (fig. 21–3).

Rims: Rim of the lid is rounded with no thickening; edge of base is rounded and thickened.

Body wall thickness: 8 mm.

Body dimensions: Lid top diameter 12–18 cm.; base diameter 12–14 cm.; height of annular base 3–6 cm., with upper edge inset 1 cm. from edge of top; overall height 4–7 cm.

Decoration: Typical motifs of the type, limited to the flat top of lid.

4. Short, vertical-necked jar with rounded body (fig. 21–4).

Rim: Externally thickened as if by the addition of a coil. Vertical or slightly outslanting. Lip squared with rounded corners. Mouth diameter 18–26 cm.

Body wall thickness: 7–10 mm.

Body dimensions: Body diameters 20–30 cm.; height 18–30 cm.

Base: Rounded.

Decoration: Design limited to the neck in a band 2–5 cm. wide.

Rare vessel shapes:

1. Shallow, open bowl.

Rim: Interior thickened, producing a broad band 1.5–3.0 cm. wide; rounded lip. Mouth diameter 22 cm.

Body wall thickness: 7 mm.

Base: Rounded.

Decoration: Incised lines around the exterior in a band in the form of incised concentric circles, with lines in between which form crosses.

DECORATION (pls. 13, 14, 15, *a*):

Technique: Deep, sharp incisions applied with a sharp instrument when the clay is extremely wet. A characteristic trait of the incisions is the very irregular, jagged, uneven lines, giving the impression of their having been done in haste. Depth of incisions varies from 1–3 mm. with the width typically 1.0–1.5 mm.; a few are 2.5 mm. wide. Occasionally, applique adornos or rim nubbins are found.

Motif: Semirectilinear and/or curvilinear motifs, ranging from simple curved or wavy lines to interlocking frets, spirals, diagonals, parallel lines and triangular units.

TEMPORAL DIFFERENCES WITHIN THE TYPE: The various forms show little trend of change through time (Appendix, table 7). All the forms carry on in later pottery types except form 3, the flat lid, which is limited to Uxy Incised and the lower (early) part of the Mazagão Phase sequence.

CHRONOLOGICAL POSITION OF THE TYPE: Uxy Incised is the principal decorated type in the early part of the Mazagão Phase, declining through time as it is replaced by Anauerapucú and Piçacá Incised.

VILANOVA PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: Black and white flecks of burnt *cariapé* (see Camaipí Plain for detailed discussion of this temper) which varies from 10–25 percent of the mixture with the largest particles 5 mm., the average speck only 1 mm. and the white cellular siliceous particles only visible under magnification.

Texture: Fine, siliceous *cariapé* temper gives a pumicelike feel. Light weight of the sherds is due to the temper. Broken edges rub off easily into a white, chalky powder. Tensile strength weak, but not friable. Dull, flat ring like a poorly cast bell. Fine air pockets are visible in cross section.

Color: Ninety percent of all sherds have a gray core flecked with black *cariapé* and bordered on the exterior and interior with a thin band of gray tan or orange tan. Ten percent are a solid gray orange.

Firing: Oxidizing fire with 75 percent of the sherds incompletely fired; fire clouds relatively rare.

SURFACES:

Color: Exterior and interior—Generally, both surfaces are the same, ranging from a dull gray brown to a light gray to a tile orange. Most are gray orange or tile orange. Less than 1 percent are gray brown on the interior with the exterior a bright orange.

Treatment:

Exterior—Well-smoothed, even with smoothing striations visible in most cases. Thirty-five percent with a very slick, even surface but not highly polished with a luster. All coils erased.

Interior—The same treatment as the exterior is typical; however, 25 percent are slightly rougher and less well smoothed. One percent have a slick, gray brown interior.

Hardness: Very soft, 2.

FORMS:

Common vessel shapes:

1. Globular jars with short neck and vertical or everted rim (fig. 22–1; pl. 9, *d*).

   Rim: Vertical or everted, unthickened or externally thickened usually with a flat or sloping flange and a rounded lip.

   Body wall thickness: 6–11 mm.; majority 8 mm.

   Body diameters: 32–40 cm.; majority around 32–36 cm.

   Base: Slightly flattened, a few rounded.

   Appendages: Occasionally, a small, irregular loop handle from the lip downward 2–4 cm. on the jar neck with an oval or round cross section, 0.9–1.8 cm. in diameter.

   Occasional decoration: Not typical, but on a few globular jars anthropomorphic faces and body features are modeled with applique and light incisions on the neck and collars and jar bodies. One vessel was modeled in the form of an anthropomorphic figure seated on a clay bench.

2. Cylindrical jars (fig. 22–2).

   Rims: Direct rim; rounded lip or squared with rounded corners.

   Body wall thickness: 6–10 mm.

   Body diameters: 18–25 cm.; mouth diameter 12–20 cm.; height 30–40 cm.

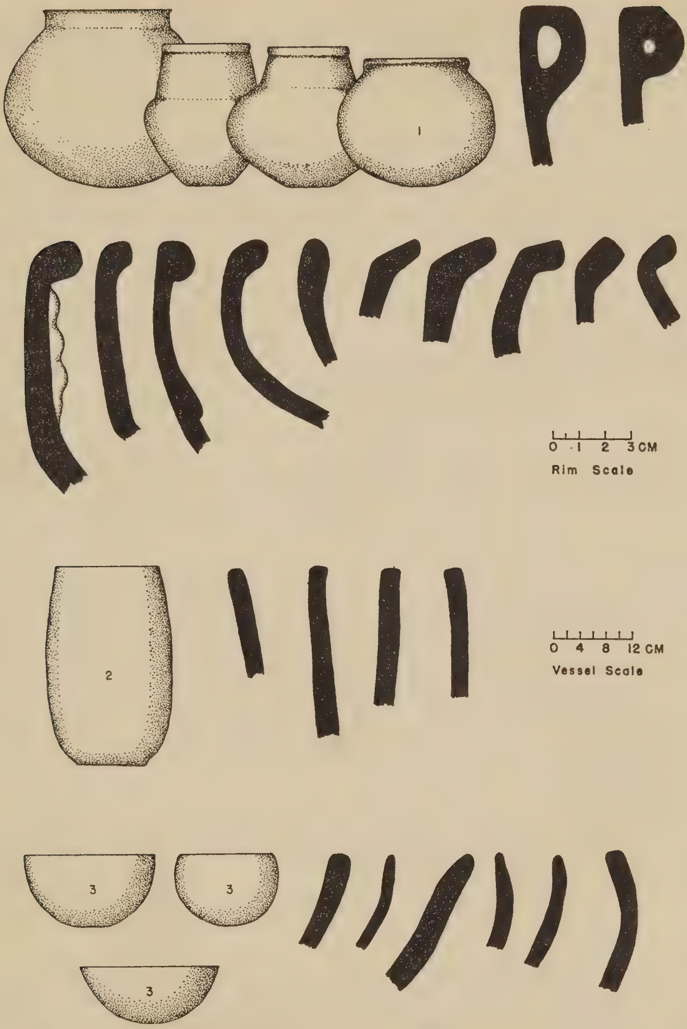

Figure 22.—Rim profiles and vessel shapes of Vilanova Plain, Mazagão Phase (Appendix, table 8).

Base: Flattened, usually with a slight pedestal 5–10 mm. high; base diameter 8–14 cm.

3. Open bowls with outcurving or slightly incurving sides (fig. 22–3).
   Rims: Rounded or square with rounded edges, occasionally exteriorly thickened.
   Body wall thickness: 4–10 mm.; majority 6–8 mm.
   Body dimensions: 20–40 cm.; majority 24–32 cm.
   Base: Rounded or flat.

Less common vessel shapes:

1. Modeled anthropomorphic figure seated on a clay bench in the Maracá urn style (see fig. 12 and pl. 3, *b*).
2. Zoomorphic urns in the form of a *jaboty* (land turtle) with a flat lid (pl. 17).

TEMPORAL DIFFERENCES WITHIN THE TYPE: Large, round or globular jars with short to medium necks and thickened rims (form 1) increase in popularity throughout time while open bowls (form 3) decrease. Note that this is just opposite the rim and vessel form trend in Mazagão Plain, suggesting that as Mazagão Plain loses in popularity to Vilanova Plain there is a comparable shift in vessel and rim forms. The tall, cylindrical jars (form 2) do not appear until the middle-upper part of the Mazagão Phase sequence (Appendix, table 8).

CHRONOLOGICAL POSITION OF THE TYPE: Vilanova Plain appears in the lower-middle part of the Mazagão Phase, at the same time as Camaipí Plain is introduced, and continues to increase in popularity until it is the dominant plain pottery type in the upper (late) part of the sequence.

UNCLASSIFIED DECORATED

A few sherds from Mazagão Phase sites show untypical types of decoration, which were too rare to warrant the establishment of a separate pottery type. The techniques represented are scraping, red painting, and punctate.

UNCLASSIFIED SCRAPED:

1. Small, short-necked jars with an everted, externally thickened rim and rounded lip. Mouth diameter 12 cm.; strap handle from lip to upper shoulder. Vertical or slightly diagonal scrapings on shoulder and neck; evenly spaced, 7–8 mm. apart, 1 mm. wide and 0.5–1.0 mm. deep. One sherd from Site A–2—Lauro and 1 sherd from Site A–5—Cafezal.
2. Body sherds with markings similar to those described above but less regular and less evenly spaced. Two sherds from A–3—Piçacá Cemetery.

UNCLASSIFIED PAINTED:

1. Shallow bowl with a flat base, outcurved sides and a double, scalloped rim (2 rows of scallops) formed by gently curved lobes 1 cm. wide and 3–4 cm. long (pl. 16, *h*). Base diameter 15 cm.; lip diameter 20 cm.; height 3.5 cm.; flat base slightly thickened to 9 mm. from a body wall thickness of 5–7 mm. Red ochre rubbed on the inner lip of the scallops. From Site A–2—Lauro.
2. One sherd from a globular jar with a medium-length, outcurved to vertical neck and a thickened to everted rim. Mouth diameter 18 cm.; body diameter 27 cm.; neck height 4 cm. Bright red ochre rubbed on the neck and upper shoulder in a band 6 cm. wide. Below this are low applique ribs. From Site A–4—Valentim.

UNCLASSIFIED PUNCTATE:

1. One sherd from a shallow bowl with small rim lobes and a single row of small punctates along the interior edge (pl. 16, *c*). From Site A–4—Valentim.

POTTERY ARTIFACTS

No pottery artifacts were found in the 1949 excavations. However, the collections in the Museu Goeldi made by Nimuendajú from sites on the Rio Iratapurú, which seriate in the early part of the Mazagão

Phase, produced a possible spindle whorl (pl. 16, *g*) and fragments that may have belonged to figurines (e. g. pl. 16, *b*). A small modeled foot that may have had a similar function came from Site A–6—Ilha das Igaçabas (pl. 16, *d*).

Nonceramic Artifacts

Unfortunately, the number of nonceramic artifacts is so few that no significant classification is possible. Although available in this part of the Amazon, stone was not a primary source of materials for tools, and the wealth of objects that must have existed of wood and other plant fibers did not survive for the archeologist in a tropical climate. Tabulating the nonceramic materials from the Mazagão Phase sites presents the following: 3 pieces of yellow ochre with smoothed surfaces and scratches suggesting use as rubbing stones; 1 red ochre fragment with the same features and use; 2 pieces of *jutahy* resin, use unknown; 1 piece of white chalk, probably the material used to fill the incisions of Anauerapucú Incised; 16 burnt-clay fragments, probably from clay used in a hearth on the floor of pile dwellings or upon a pedestal stand as is the custom today among the Indians and *caboclos* of the Amazon; 105 natural rock fragments of which 47 were fire burnt; 4 hand-ax fragments roughly shaped from natural, waterworn rocks which also might have been used as hammerstones; 1 well-polished, ungrooved ax fragment; 2 pebble pottery smoothers; 1 grooved, sandstone "shaft-smoother"; and 2 unworked percussion flakes which could have been used as scrapers. The fairly rich pottery traits of the Mazagão Phase make the sparsity of the other artifacts all the more noticeable.

Glass trade beads were listed in detail at each site from which they were found; hence no repetition is required here. The reader is referred to table A (p. 51) and table B (p. 58) for details.

CERAMIC HISTORY

The region bounded on the north by the Rio Araguarí-Amaparí and on the south by the Rio Jarí (omitting the Rio Maracá tradition for the moment) produced archeological material belonging to a single complex, designated as the Mazagão Phase. The refuse deposits of the village sites were too shallow for stratigraphy except at Site A–2—Lauro, where the refuse 45 cm. thick provided a partial basis for seriation of the ceramic types from the other sites. This shallowness would suggest that a short period of time is involved; nevertheless, the changes in popularity of various wares are evident (fig. 23; Appendix, table 1). Since there was apparently a conscious selection of certain decorated pottery types for burial purposes, such as Anauerapucú Incised, it would have created false impressions and trends to interdigitate the cemeteries directly into the habitation

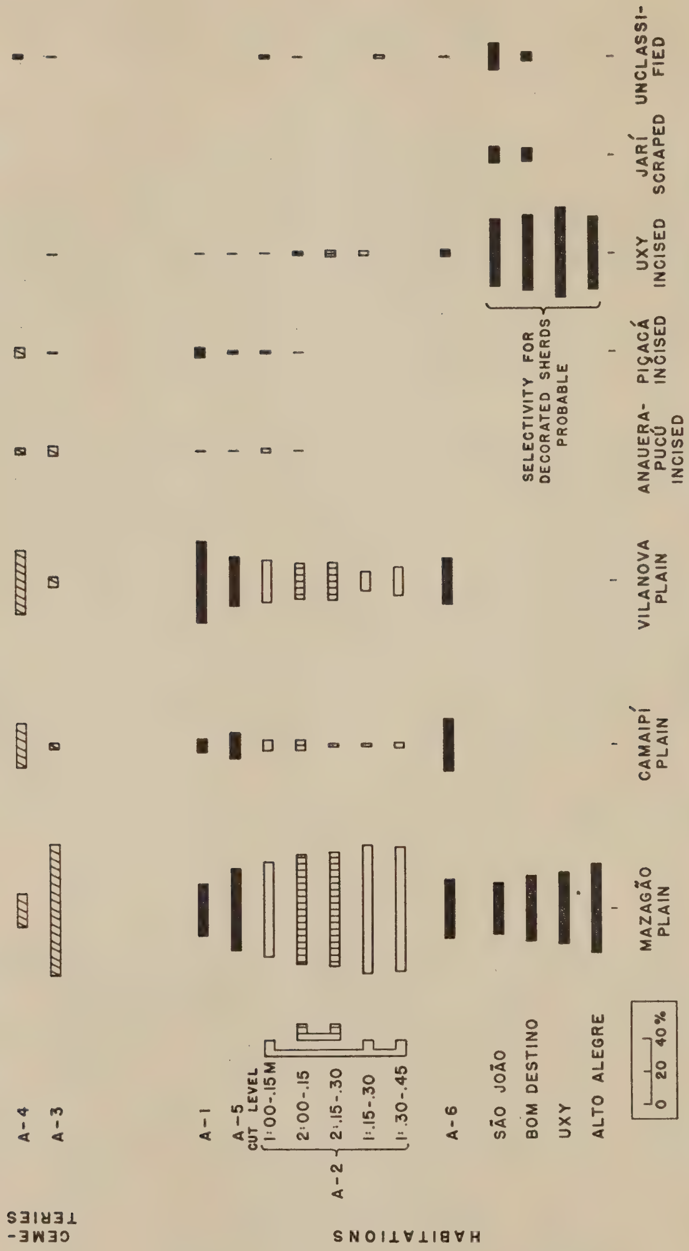

FIGURE 23.—Seriation of Mazagão Phase sites on the basis of pottery type frequency (Appendix, table 1).

sites. However, an examination of the general popularity trends of the various pottery types, as well as a comparison of the decorative style and technique of certain wares, correlates cemetery Site A-3—Piçacá Cemetery with the upper level of both cut 1 and cut 2 of occupation Site A-2—Lauro and cemetery A-4—Valentim with habitation Site A-1—Piçacá.

European glass trade beads, found in cemeteries A-3 and A-4, give a post-Columbian terminal date to the seriated time sequence of the Mazagão Phase. Unfortunately, in spite of the fact that the beads include distinctive types, no more precise date can be attributed to them. Extended consultations with bead experts and exhaustive efforts to use these beads in a more specific way has produced no evidence to indicate what type of beads were traded first and by which Europeans in South America, information that would make it possible to assign an absolute date to the terminal sites of the Mazagão Phase sequence. Although in North America bead experts have assigned specific dates to certain of the trade beads which also appear in the Amazon, all these dates are too late and do not shed further light on facts already known from historical records (see The Historical Aftermath, pp. 556 ff.). Europeans were trading in the area from A. D. 1500 onward, almost 150 to 200 years earlier than the dates assigned to the same types of trade beads in the North American area.

The ceramic sequence in the Mazagão Phase is characterized by a general, consistent decrease in popularity of the sandy, crushed-quartz-tempered Mazagão Plain and a concomitant increase in abundance of the smooth, soft, *cariapé*-tempered Vilanova Plain, and by a shift in the decorated wares from the unstylized, and sometimes carelessly executed, Uxy Incised to the consistent and precise Anauerapucú and Piçacá Incised styles (fig. 23).

In the earliest site excavated in the Rio Vilanova region (Site A-6), Vilanova and Camaipí Plain are both present in addition to Mazagão Plain. The collections made by Nimuendajú from the Rio Iratapurú of the Rio Jarí drainage, however, completely lack both Vilanova and Camaipí Plain but contain the best and most varied examples of Uxy Incised. Although these undoubtedly represent selected samples due to a conscious choice of decorated rather than plain wares, the fact that the collection numbers 248 sherds, nearly half of which are plain ware, makes it seem unlikely that Vilanova and Camaipí Plain would be totally missing in the collection had they been present at the sites. If we may seriate these sites at the bottom of the sequence (the only possible position when the decorated types of Uxy Incised and Anauerapucú Incised are considered), the position of Site A-6—Ilha das Igaçabas becomes easier to explain. The pottery from this site differs from that of later ones both in its high percentage of Camaipí Plain and in the relative lack of differentiation in surface color between the three plain wares. Although more cream-colored in Vilanova and Camaipí Plain, the grayish surfaces approach the Mazagão Plain represented at the Iratapurú sites more closely than the brick-red and light-cream wares of the other Rio Vilanova and Rio Piçacá drainage sites. The high percentage of Camaipí Plain (32.4 percent) from Site A-6 may be related to the introduction of the new sandless plain ware and its, as yet, incomplete differentiation, Camaipí Plain being in reality a hybrid or transitional form with the temper of Mazagão Plain and the texture and color of Vilanova Plain.

If more sites in the southern part of the Territory of Amapá had been available for the seriation, the abrupt changes in several places in the Mazagão Phase sequence would be erased. A gap now exists in the lower part of the sequence but there is no evidence as to its length. Although the seriation of Site A-6 near the bottom of the sequence instead of near the top may appear questionable on the basis of the plain-ware percentages, the correctness of this position is confirmed by the analysis of vessel shape (fig. 24).

By the time of the lowest levels at Site A-2—Lauro, the distinction between Vilanova and Mazagão Plain has become pronounced and the transitional Camaipí Plain has been reduced to an insignificant 3 percent of the total ceramics. Mazagão Plain has become an orange-red, oxidized-fired ware in contrast to the light-tan surfaced Vilanova Plain. Their subsequent history lies in the reduction of Mazagão Plain from 76 percent in the lowest level of cut 2 or 79 percent in the lowest level of cut 1 at Site A-2, to 32 percent at Site A-1, correlated with the increase in percentage of Vilanova Plain from 17 percent or 12 percent to 50 percent in the same sites and levels. Seriation of our habitation sites on the basis of plain wares gives the following order of antiquity, beginning with the earliest: Site A-6—Ilha das Igaçabas, Site A-2—Lauro, Site A-5—Cafezal, Site A-1—Piçacá (fig. 23).

Of the decorated wares, Uxy Incised has the longest history with the greatest change in popularity. From 3.8 percent at the earliest site, A-6 (omitting at this time a consideration of the Rio Iratapurú sites because of their undoubted selectivity of decorated sherds), it drops to 0.3 percent at Site A-1. Part of this decline has its explanation in the sudden appearance in the top level at Site A-2 of Anauerapucú and Piçacá Incised, both of which are characteristic of the latter part of the Mazagão Phase. Their occurrence in the habitation sites runs less than 3.0 percent with the exception of the 7.5 percent occurrence of Piçacá Incised at Site A-1. No distinction can be drawn between the percentages of Piçacá Incised in the cemeteries as opposed to the habitation sites, but the generally higher percentage of Anauerapucú Incised in the cemeteries indicates it to be primarily a burial ware.

In the Mazagão Phase incision was not only the primary, but almost the exclusive decorative technique. Two major types of incised designs are distinguishable, with the crudely applied, curvilinear designs of uneven and irregular lines (Uxy Incised) common in the early part of the Phase in sharp contrast to the late, carefully executed, rectilinear motifs of both Piçacá and Anauerapucú Incised. Not only does this latter style show greater care in the workmanship but it also demonstrates a more advanced ceramic design technique in the filling of the incised lines with white chalk. There is little correlation on stylistic and technical grounds to suggest that Anauerapucú or Piçacá Incised evolved out of Uxy Incised. Rather, the abruptness of their appearance in fully developed form indicates that they were intrusive.

The other decorative techniques of Mazagão Phase pottery are minor in importance. Scraping occurs on only a few sherds from the Rio Iratapurú sites. Only one sherd (a bifurcated-scalloped rim of Mazagão Plain paste) from A–2 and one from A–4 have any traces of paint; this appears to be the result of rubbing the surface with red ochre. Modeled or applique ornament was employed principally in connection with burial jars, where it was used to produce faces and parts of either zoomorphic or anthropomorphic body anatomy, such as genitalia, backbone, nipples, navel, toes, and fingers. The most common anthropomorphic style is that typical of Mazagão Plain and Vilanova Plain (figs. 13, *b*; 19–1), where the face was made on the vessel neck with applique and light incision or slight depressions, with the vessel body modified only slightly to suggest male or female sex by the addition of a thin, appliqued strip as a backbone, nubbins as small breasts or genitals, and a slight depression for the navel. Examples of this technique include a vessel found by Lima Guedes at Igarapé do Lago (pl. 9, *b*); jars B and C (fig. 8) of Burial Group 1, Site A–3; the large urn of Burial 5, Site A–3; and the burial urn (fig. 13, *b*) of Burial 3, Site A–4. The only Mazagão Phase examples of true anthropomorphic modeling are vessel Z, Burial Group 1 from Site A–3, and vessel A, Burial Group 2, from Site A–4 (fig. 12). Presumably these are copies of the Rio Maracá style and were not an indigenous development of the Mazagão Phase. Zoomorphic figures are not common except on the Ilha do Pará., where burial urns in the form of the turtle predominate (pl. 17). With the exception of a large foot of a turtle (fig. 6) and the head and tail of a *cutia* from the pottery bench of the anthropomorphic vessel found at

Site A–3 (pl. 7, *a*), no other animals were represented on the ceramics of the Mazagão Phase. A few bird heads were affixed to the necks of some of the vessels found by Lima Guedes at Igarapé do Lago sites (pl. 9, *a*, *c*).

In addition to the seriation and study of the change in the popularity of various pottery types through time, the rim and vessel shapes of each pottery type were analyzed in the temporal framework provided by the pottery type seriation. The most distinctive trends in vessel and rim shapes occur in the three major plain wares—Camaipí, Mazagão, and Vilanova Plain. Form 1 of Mazagão Plain, a round-bodied jar with thickened, everted rim and short, insloping to outsloping neck (fig. 19–1), decreases steadily from a high of 80 percent at the earliest sites to 20 percent in the latter part of the sequence (Appendix, table 5). While form 1 is declining, Mazagão Plain form 3, a round-bodied jar with an unthickened rim and short vertical neck, is increasing slightly. The most distinctive time marker within Mazagão Plain is the late appearance of form 2, tall, cylindrical jars with slight pedestal bases. Concomitant with these developments in Mazagão Plain, the opposite trend is taking place in Vilanova Plain. Form 1, the round-bodied jar with thickened, everted rim and short, vertical to outsloping neck, increases in popularity (Appendix, table 8) while form 3, a large, open bowl, decreases. This bowl shape was also found in Mazagão Plain, but had an erratic history, generally ranging from 14 to 20 percent, but reaching 28 to 30 percent at a few sites where the small sample might account for the larger percentage. Camaipí Plain form 1, the round-bodied jar with thickened, everted rim and short vertical to outsloping neck showed the same decrease as that demonstrated for a similar form in Mazagão Plain (Appendix, table 3). These rim and vessel-shape trends reflect the history of the plain pottery types of the Mazagão Phase: while Mazagão Plain decreases, Vilanova Plain increases. The decrease in popularity of Mazagão Plain form 1 while a similar shape in Vilanova Plain is increasing suggests a retention of the popular plain ware shape on whatever plain pottery type was most common throughout the history of the Phase.

The shape trends within each decorated pottery type are not as pronounced as in the plain wares; however, some shapes restricted to certain pottery types show a distinctive distribution through time. Uxy Incised form 3, flat lids (fig. 21–3), is absent in all the other decorated types except in Piçacá Incised where it constitutes rare form 2. Pedestal-basin lids, a popular shape of Anauerapucú Incised (form 1) and Piçacá Incised (form 2) are not found on any other decorated pottery type. This point is highly significant for it further demonstrates that the development of Anauerapucú and Piçacá Incised is the result of some outside influence and is not the direct outgrowth of the earlier Uxy Incised.

Since the vessel and rim shapes were designated by form numbers for each pottery type, arranged generally in the order of their popularity within the type, considering the jars first and the bowls second, a common ground of comparison was needed to study the shape trends throughout the Mazagão Phase as a whole. Consequently, all the shapes of each pottery type were analyzed and lumped into seven common forms. These were given an alphabetical designation and descriptive term (e. g., form A—carinated bowl; form B—jar, thickened rim, usually vertical neck; form C—tall, cylindrical jar, etc.; see fig. 24 for drawings). The various shapes of each pottery type were plotted with their respective form numbers to give a common unit of reference. The results are shown in Appendix, tables 9 and 10, and on a chart (fig. 24) where, for example, form A—carinated bowls contains form 2 of Anauerapucú Incised, form 3 of Piçacá Incised, and forms 1 and 2 of Uxy Incised. Using these common shapes, the count from the individual tabulations of vessel and rim shape of each pottery type was plotted on a graph in which the vertical factor consisted of the various sites arranged according to their seriated sequence based on trends of pottery types, and the horizontal factor was the common vessels shapes ranging from form A through form G.

The completed chart (fig. 24) presents a clear and graphic picture of the shifts in popularity of the various shapes during the Mazagão Phase. In fact, the shape trends are so distinctive and limited in their distribution to a specific point in the time sequence that the position of certain sherds in the Mazagão Phase sequence could be ascertained by shape alone. It is important to note then that the sequence established on the seriation of pottery types from the various sites is confirmed by this independent shape analysis. Site A–6 did not fit neatly into the lower part of the sequence because of its high percentage of Camaipí Plain, but its location was defended mainly on the absence of the late decorated types, Anauerapucú and Piçacá Incised, and the presence of the early type, Uxy Incised, as well as the consideration of certain color distinctions and variations in the plain wares. The plotting of the common vessel shapes for the Mazagão Phase into the order of the seriated sequence based on pottery types verifies, without any question, the position of the sites in the sequence, especially Site A–6—Ilha das Igaçabas. To be specific: form G, flat lids, is found only in the lowest part of the sequence where it ranges in popularity from 4 to 20 percent; form D, pedestal-basin lids, is not found in the lowest part of the sequence, but is restricted to the middle and upper sectors; form C, tall, cylindrical jars, is found solely in the upper (late) sections, where it has a 6.3 to 9.0 percent popularity. On percentage of plain wares alone Site A–6 might have been considered for seriation near the top of the sequence instead of near the bottom; however, this position would be impossible according to the vessel and rim form analysis. The placing of Site A–6 at the top would produce an isolated late appearance of vessel form G and an absence of vessel form C, which otherwise occurs consistently in the latter part of the Phase.

The trends of the other vessel and rim shapes are also marked. For example, form A, carinated bowls, declines from as high as 57.0 percent to 12.4 percent, while form E, open bowls, increases from a low of between 4.0 percent and 7.2 percent at the bottom to 20.3 percent and 25.0 percent at the top of the sequence. With the exception of form C, tall cylindrical jars, whose distinctive history has already been discussed, the trend of the jar shapes is not as clear cut as that of the other vessel forms. Disregarding the sites with small samples, which unfortunately warp the percentages, the trend of form F, round-bodied jar with an outcurved, direct rim, is irregular, but form B, the round-bodied jar with a thickened, vertical or outslanting rim, increases to a peak at the middle of the sequence and then begins to decline again (fig. 24).

As the discussion in the preceding section on nonceramic artifacts indicated, nonpottery artifacts are too rare and undifferentiated to permit any statement about change in technique of manufacture or style during the Mazagão Phase that would supplement the sequence based on pottery.

DIAGNOSTIC FEATURES OF THE MAZAGÃO PHASE

Sites of the Mazagão Phase are found throughout the region between the Rio Araguarí-Amaparí and the Rio Jarí, with some indication of a late concentration in the Rio Vilanova at the time that the Rio Maracá was developing its own local tradition. The habitation sites are all located on naturally high land near a constant water supply, above the flooded lowlands, offering advantages from a defense standpoint. The refuse varies in thickness from the surface only to 45 cm. at the deepest site and is scattered over areas ranging from a small site 10 meters in diameter to the largest, 75 by 83 meters. The nature of the sites and their associated cemeteries suggests that at no time was the total population large.

The burial pattern is consistent: secondary burial with offerings in small bowls and occasionally with glass beads or a stone ax placed inside the urns. The cemetery occupies a high spot and the vessels were partially buried and were typically covered with a lid. The arrangement of the urns in the cemetery appears to have been hap-

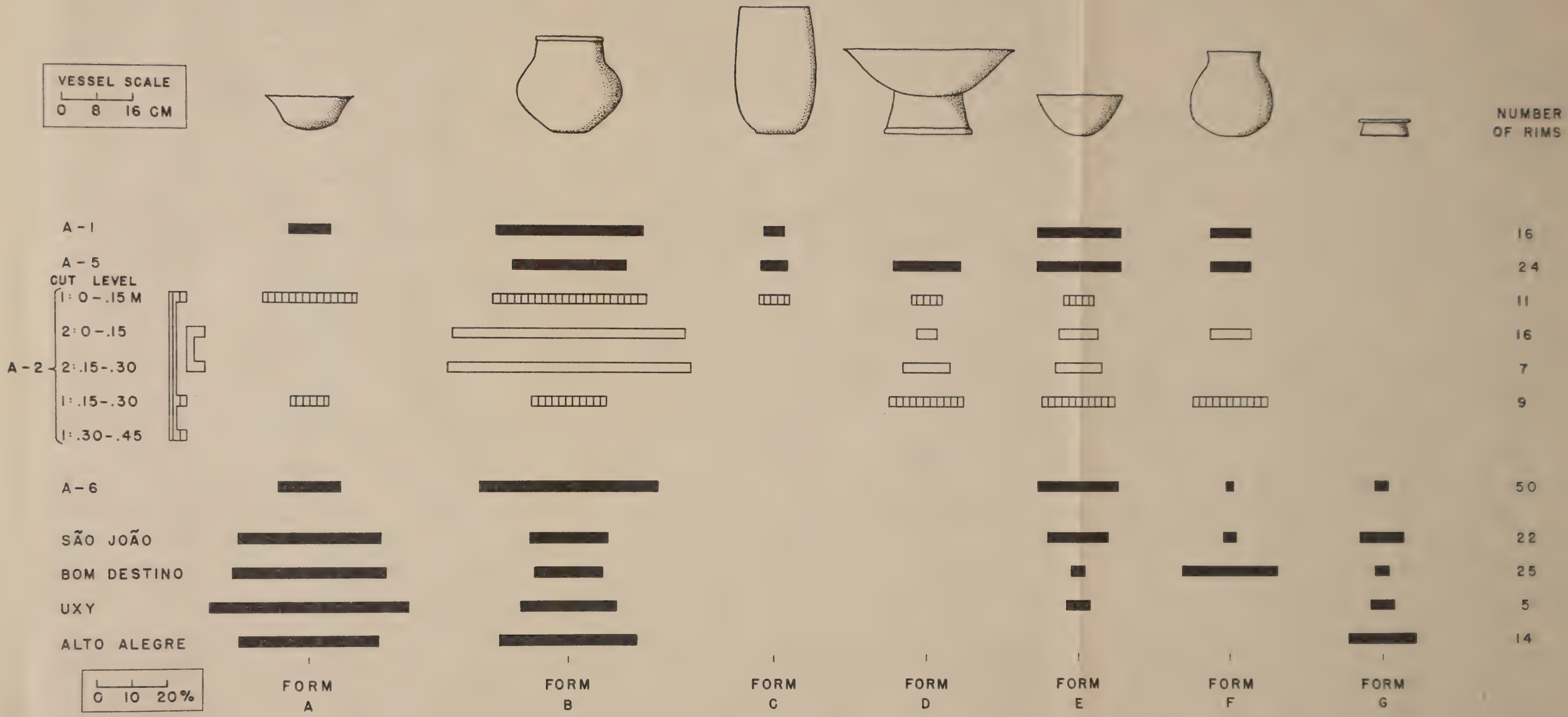

FIGURE 24.—Trends in the popularity of common vessel shapes of the Mazagão Phase (Appendix, table 10).

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hazard, often with no consideration of the location of a previous burial urn.

Nonpottery artifacts are rare, limited to a few axes, hammerstones, pebble smoothers, a shaft straightener, ochre and chalk.

Seriation of the ceramic styles shows a distinct shift in emphasis through time. The earliest excavated sites are characterized by the equal popularity of Mazagão Plain, a sandy, quartz-and-mica-tempered ware, Vilanova Plain, a *cariapé*-tempered, smooth, soft pottery, and Camaipí Plain, a ware possessing both *cariapé* and sand temper. Mazagáo Plain shows an immediate sharp rise in popularity, but then begins gradually to give way to Vilanova Plain.[10] The earlier periods emphasize curvilinear, deep, crudely incised designs (Uxy Incised) which tend to decrease in frequency as the well-developed, rectilinear incised varieties, Anauerapucú and Piçacá Incised, are introduced and increase in popularity. The decorated wares have a much higher percentage of occurrence in the cemeteries than in the occupation sites, giving some indication of a conscious manufacture or use of certain wares for burial and others for domestic use.

The effect of a strong outside influence is manifested in the sudden appearance of complex vessel shapes and in the introduction of the precisely executed design motifs of Piçacá and Anauerapucú Incised, which are carried to an acme of perfection in the latter type. Some contact or borrowing without amalgamation or assimilation of either culture occurred between the Mazagão Phase and the tradition occupying the Rio Maracá, as is evidenced by the copies of anthropomorphic urns in the cemeteries of the Mazagão Phase.

Although the actual duration of the Mazagão Phase cannot be determined from the time sequence derived from the seriated ceramic styles and stratigraphy, evidence suggests that a long period of occupation of this region is not probable. The terminal date of the Mazagão Phase cannot be given absolutely, although glass trade beads are found in limited numbers in some of the cemeteries, indicating a post-European contact date for at least a part of the inhabitants of the Mazagão Phase and the local tradition on the Rio Maracá.

THE ARISTÉ PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

With the exception of one cemetery, Site A–14, located in the present city of Macapá, and a small camp site, Site A–13, in the headwaters of the Rio Matapí, the known archeological sites of the Aristé Phase are restricted to the region north of the Rio Araguarí-Amaparí. These two exceptions present certain peculiarities (which will be explained later) and are not important enough to interfere with the general conclusion that this river must have served as a boundary or frontier between two distinct and generally contemporaneous cultures. Not only the ceramic traditions but also the burial patterns indicate that we are dealing with separate groups. Data on the Aristé Phase comes from 7 habitation and 7 cemetery sites in addition to the famous Cunaní burials dug by Goeldi in 1896, and sites described by Coudreau and Nimuendajú.

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[10] This transition from a sandy, gritty ware to a soft, smoother ware tempered with another material is repeated in the Aristé Phase.

SITE A-7—AMAPÁ CITY

The present town of Amapá covers an Indian village and cemetery site. This superposition is more than coincidental, for the only continuously dry land in the region, regardless of season, is a long narrow finger rising 4 meters above high-water level along the south side of the Rio Amapá Pequeno. At the time of his visit in 1895, Goeldi noticed the presence of Indian remains, but dismissed them as unimportant because he saw no decorated ware (Goeldi, 1900, pp. 7–8). The ridge of high land ranges in width from 100 to 250 meters and a fragment of a stone tool was picked up as far as a kilometer south of the riverbank. Throughout the high area residents have uncovered pottery and stone fragments while cultivating their gardens or constructing new houses. The continuous row of buildings along both sides of the main street, Rua Senador Lemos, which now occupies the center of the ridge, made extended excavations out of the question. Tests in various parts of the street produced sherds (Evans, 1951, fig. 3) that had been ground almost to powder by the impact of feet over several centuries and showed the black refuse layer to be 10 to 15 cm. deep, resting on sterile, orange to brown clay. Some 300 meters from the riverbank, the ridge is cut by a ravine, now crossed by a concrete bridge and culvert. At the time this was built, some 5 years previous to our visit, the north bank was cut off 0.75 to 1.00 meter, removing the tops of several large jars and leaving a broken edge to show where the bases were still buried in the street. One of these, excavated with great difficulty because of the hard-packed clay in and around it, was 50 cm. in maximum existing diameter, 15 cm. in existing height, and 13 cm. in diameter at its flat base. It was identified as Serra Plain. Associated with it were a few small sherds of a well-polished, red variety of Serra Painted. Subsequent to our visit a globular jar of Serra Plain with a 2-cm.-wide red band on the neck and additional sherds were collected in the main street some 15 meters north of our excavation.

The 421 sherds collected from the site of Amapá are Serra Plain (96.4 percent) except for 14 sherds of Serra Painted (3.3 percent), and 1 sherd of Aristé Plain (0.3 percent). Nonceramic artifacts from Site A–7 include an ax, hammerstones, and a grinding stone:

Stone ax.—A large, flat ax was made from a fine-grained, gray-black diabase by pecking and abrading. The sides of the poll are rounded with a tapered butt, pecked on all surfaces, and with a convex bit polished on both surfaces for a distance of 1 cm. back from the blade edge; length 21.7 cm., bit width 6.8 cm., poll width 7.6 cm., poll thickness 3.5 cm., width of butt end 4.5 cm.

Stone tool.—The fragment of a stone tool of fine-grained granite made from a naturally shaped, waterworn rock which was rounded off to form a blunt end but with very little pecking or polishing to give it shape. This worked end shows slight usage as a hammerstone with several flakes removed; the other end is broken off. By its shape, the artifact could be a fragment of an ax or a hammerstone. Present fragment measures 5.0 cm. long, 5.0–5.6 cm. wide, 3.5 cm. thick with a half-round cross section.

Small hammerstone.—Of fine-grained, grayish-white diabase, shaped by abrasion with no pecking marks visible and with the larger end showing signs of use as a hammerstone. Although the corner of one edge is chipped off, the object measures 9.3 cm. long, 4.0 cm. wide at base, 2.4 cm. wide at center of poll, and uniformly 2.1 cm. thick (fig. 25, *a*).

Grinding stone (*mano*).—This fragment is so badly eroded that most of the surface is pitted giving it an unnatural roughness due to the differential weathering of

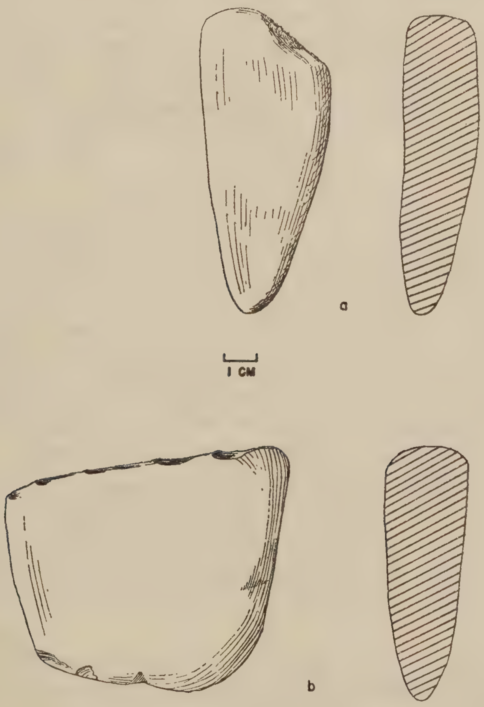


FIGURE 25.—Stone artifacts from A–7—Amapá, Aristé Phase. *a*, Small hammerstone. *b*, Grinding stone fragment, also used as a hammerstone.

the large, quartz particles in the coarse granite. One surface is well polished and smoothed from usage as some sort of grinding stone. Only half of the specimen exists with the rounded end slightly battered from use as a hammerstone; perhaps this latter usage occurred only after it had broken and become useless as a grinding stone. The present fragment measures 7.8 cm. long, 8.5 cm. wide, and 2.4 cm. thick, tapering slightly to 1 cm. thick at the end (fig. 25,*b*).

SITE A–8—AURORA

Although the site was constructed by peoples of the Aruã Phase and probably used as a place of ceremonial significance in their transitory occupation of the Territory of Amapá before going to the islands of Mexiana, Caviana, and Marajó, the later peoples of the Aristé Phase apparently placed a vessel or two around the standing stones (pl. 2). There is no need to redescribe the site for the details have been given in the Aruã Phase (pp. 38–40). Twelve of the fifty sherds found at Aurora belong to Aristé Phase pottery types. These fragments were scattered just beneath the surface and represent only a few vessels. They classify as 2 sherds of Serra Plain and 10

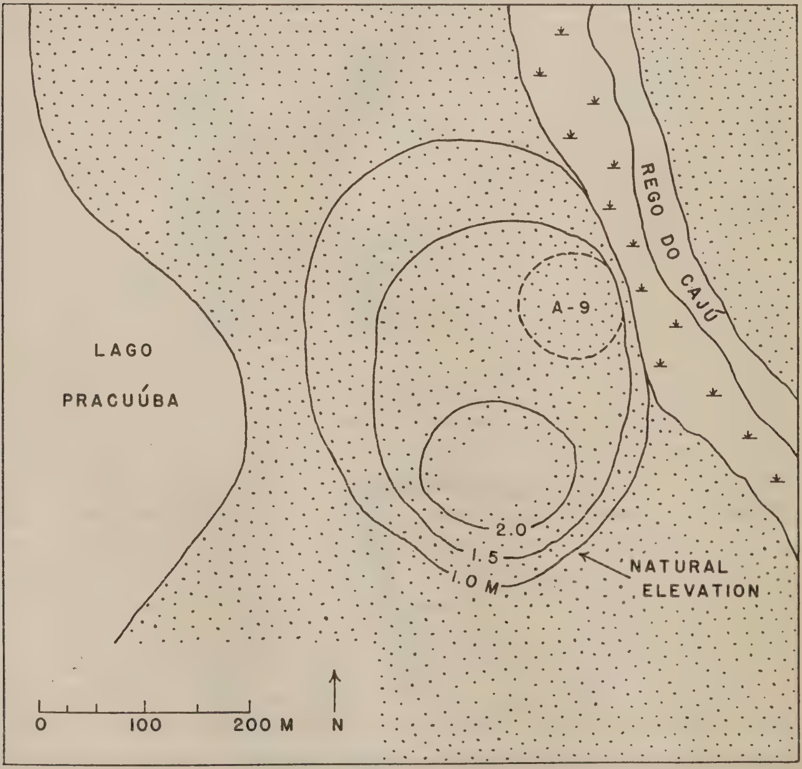


FIGURE 26.—Ground plan of A–9—Relógio, a habitation site of the Aristé Phase.

sherds of Aristé Plain. Since there is no evidence of extensive use of this site or any of the other stone alinements by the Aristé Phase, it deserves no further comment in this section.

SITE A–9—RELÓGIO

The region immediately south of the town of Amapá is dotted with hundreds of lakes, large and small, with rolling meadows or thick forest along their shores. The habitation site, A–9, begins about 10 meters back from the edge of the Rego do Cajú, a channel joining the east end of Lago Pracuûba with the west end of Lago Socaiozabinho (fig. 26; pl. 4). It occupies an area about 100 meters in diameter, now indistinguishable in the dense secondary forest growth and underbrush from the surrounding region. The land remains 1.50 meters above the water at its highest level. Although the *caboclo* who was our guide said he had found two small jars near a house he at one time built on the site, we found only sherds. A 2- by 2-meter test excavation in the north end of the site, where the sherds seemed most abundant, showed the deposit to extend from the surface to a depth of 10 cm. Beneath the sherd-bearing black loam, the sterile soil was light brown. This test produced 439 sherds, of which 387 or 88.2 percent were Serra Plain, 49 or 11.2 percent were Aristé Plain and 3 or 0.6 percent were Daví Incised. In addition, there were 27 burnt-clay fragments and 15 granite and quartz natural rock fragments, only a few of which showed traces of having been subjected to fire.

SITE A–10—MONTANHA DA PLUMA

The Igarapé da Serra drains out of rocky, rugged hills with numerous granite outcrops into the northwest side of the Rio Flexal. Halfway upstream from the mouth of the Igarapé da Serra and 2 km. inland from the north bank is a granite outcrop (pl. 5) covering an area about a kilometer in length and half a kilometer in width and rising, at its highest point, 50 meters above the surrounding tree-dotted savanna. Among the boulders scattered on the south flank of this hill, 8 meters above the level plain below, is a granite block 5 meters high and 4 meters wide. Beneath it runs a tunnellike cave 4 meters long. The south mouth, 2.45 meters wide by 70 cm. high, opens upon a natural shelf, 4 meters wide and 8 meters long, while the north mouth, 2 meters wide and 55 cm. high, was blocked on the east and north by two large boulders, leaving only a small entrance way from the west.

Large sherd fragments from burial urns were scattered for a distance of 1 meter outward from the cave at the north mouth and on the south side covered an area 3 meters out from the cave and 4 meters along the base of the rock (pl. 5, *b*). The interior of the cave was littered with broken burial urns, and many fragments were covered with a thin (5 cm.) layer of bat dung and dry, fine, powdery dust. The cave floor was irregular, with a narrow rock shelf on each side slightly higher than the center aisle, which was filled with sterile talus wash. The guide stated that he had seen the cave at a time when the burial urns were intact, but that years ago *caboclo* children, vying to see who could break the most, had reduced them to their present condition. As a result of this destruction, the only possible excavation procedure was to make a collection of material. Since there appeared to have been no gross disturbance of the position of the vessels during the breakage, the sherds from within the cave were kept in separate bags and given different catalog numbers from those on the outside on the assumption that the latter vessels represented later burials after the cave had been filled. During excavation, 12 small, European glass trade beads were found at the south mouth intermixed with sherds and dirt. All the beads were the small, "seed" variety of porcelain white color, discoidal in shape, 2 to 3 mm. in diameter and 2.0 to 2.5 mm. long with the perforation 0.5 mm. or less in diameter. Fine bone scraps were scattered throughout; some showed evidence of cremation; all were too fragmentary to classify. All the sherds from inside the cave had a black patina, an unnatural hardness and a high, metallic ring resulting from the continuous percolating of mineral-laden waters into the porous ceramic until the pottery became mineralized. Since it was clear that the cave had been used solely as a depository for burial urns and since it was not possible to preserve or transport all the sherds from Montanha da Pluma, a selection was made of all rims, bases, and diagnostic body sherds. An analysis of these showed a total of 24 different burial vessels from outside the cave, of which 11 or 46 percent were Serra Plain, 3 or 12.4 percent Serra Painted, 5 or 20.8 percent Aristé Plain, and 5 or 20.8 percent Aristé Painted, and 61 vessels from inside the cave, representing 16 or 26.2 percent Serra Plain, 3 or 4.9 percent Serra Painted; 30 or 49.2 percent Aristé Plain, 9 or 14.8 percent Aristé Painted, 2 or 3.3 percent Flexal Scraped, and 1 or 1.6 percent Unclassified.

Careful examination of the area both inside and outside the cave revealed no artifacts besides pottery vessels and the aforementioned glass beads.

SITE A-11—MONTANHA DE ARISTÉ

On the Igarapé da Serra, about 8 km. upstream from Site A-10 and some 2 km. inland from the north bank, is the Montanha de Aristé (fig. 1). The entire region is broken into steep-sided hills whose granitic substructure is revealed in sheer rock walls and innumerable shelters and small caves. Tall virgin forests with little or no undergrowth cover the rocky slopes and summits, which rise 75 to 100 meters above the riverbed.

Cave 1, perhaps more correctly called a slight rock shelter, was on the east side of the mountain at the base of a large, sheer granite outcrop 100 meters long, with its flat face rising almost vertically for 15 meters. Burial urns had been placed along the base of this outcrop for a distance of 15 meters, and spalling rocks had broken all of them badly (pl. 6, *a*). Sherds of the broken burial vessels, scattered in the rock chips and talus dirt, were most highly concentrated toward the center, thinning out toward both limits of the cemetery area. Of the 31 vessels represented by the sherds collected, 3 or 9.6 percent were Serra Plain, 23 or 74.4 percent Aristé Plain, 4 or 12.8 percent Aristé Painted, and 1 or 3.2 percent Flexal Scraped. A small Serra Plain sherd, 4.0 cm. long, 1.9 cm. wide and 8 mm. thick, had the edges curved and well-rounded from extended use, probably as a pottery scraper (fig. 27).

Cave 2, some 10 meters above and southwest of Cave 1 on the opposite side of the mountain, was formed by the undercut base of an enormous granite boulderlike outcrop. The ceiling sloped from a height of 81 cm. at the front to 40 cm. at the back toward the middle of the cave and then dropped sharply to only 15 cm. at the rear in the west end, forming a completely protected shelter 5 meters from side to side and 1.80 to 3.00 meters deep. The ground in front of Cave 2 sloped gently for about 4 meters and then dropped vertically to the Igarapé da Serra 35 meters below. A number of the vessels that stood upon the dirt floor had been broken by large rocks falling from the ceiling (Evans, 1951, fig. 5) and by the spreading roots of a large *sumamera* tree growing against the east side (fig. 28). Others were damaged and almost buried in the dirt thrown back by the burrowing

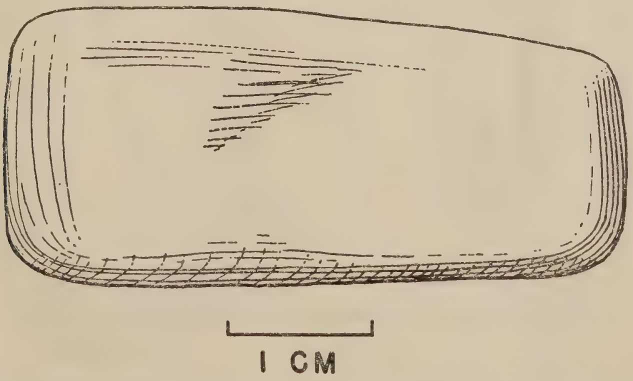
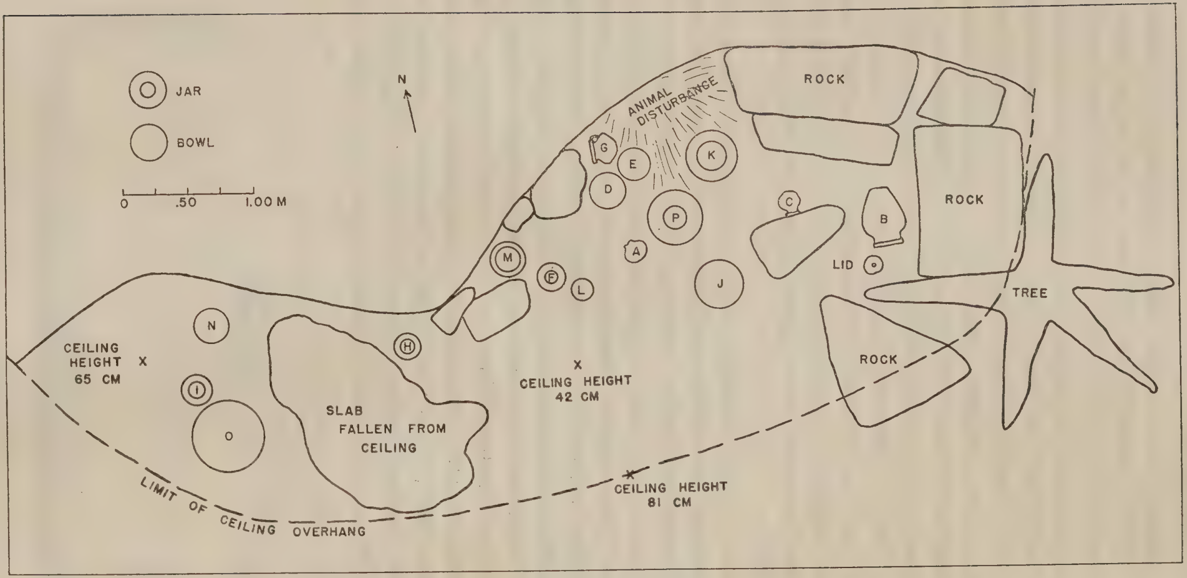


Figure 27.—Worked sherd scraper from the Aristé Phase cemetery of A-11—Montanha de Aristé, Cave 1.


JAR
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ROCK
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L
M
N
O
P
CEILING HEIGHT 65 CM
CEILING HEIGHT 42 CM
CEILING HEIGHT 81 CM
SLAB FALLEN FROM CEILING
LIMIT OF CEILING OVERHANG

FIGURE 28.—Ground plan of A-11—Montanha de Aristé, Cave 2, Aristé Phase.

of an animal. In spite of these disturbances about a dozen remained intact or nearly complete.

Cremation was the common practice and the vessels with undisturbed contents were filled to within a few centimeters of the rim with a mixture of light-tan, sandy loam, and burned bone fragments. Two uncremated secondary burials, both adults, were found; one of them was in a jar that also contained remains from a cremated body. None of the jars had lids in place and, except for one stopperlike fragment near vessel B, no lids or covers were identifiable.

Of the total of 56 vessels represented by the sherd material and the complete specimens, 16 or 28.6 percent were Aristé Plain, 21 or 37.5 percent were Aristé Painted, 6 or 10.7 percent were Serra Plain, 3 or 5.4 percent were Serra Painted, 9 or 16.1 percent were Flexal Scraped, and 1 or 1.7 percent Daví Incised.

A pottery figurine and a fragment of a stone chisel, possibly burial offerings, came from the eastern part of Cave 2:

Stone chisel.—The stone chisel (fig. 29, *a*, *b*) consists of about one-half of a small, highly polished, slate chisel with a groove 1–3 mm. deep along one edge. The function of the groove is unknown. The chisel is well made, very sharp, 2 cm. wide at the bit, enlarging to 2.7 cm. wide and 1.8 cm. thick at the center, with the existing fragment 4.7 cm. long.

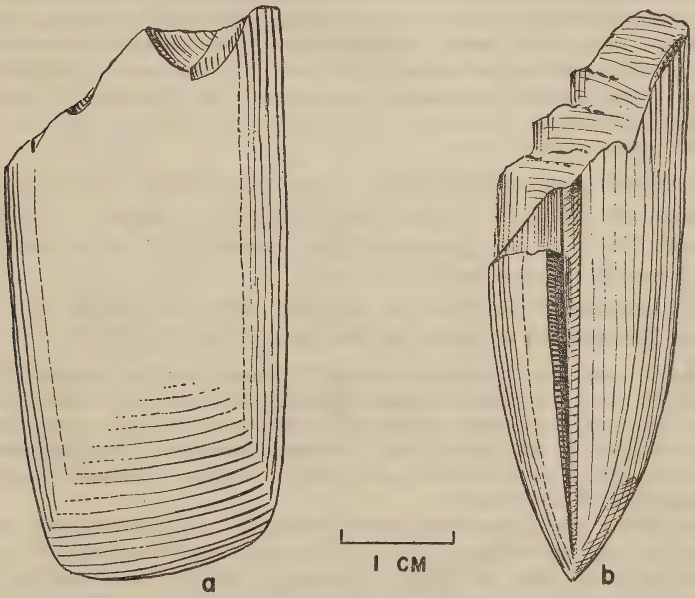

FIGURE 29.—Small stone chisel from A–11—Montanha de Aristé, Cave 2, Aristé Phase.

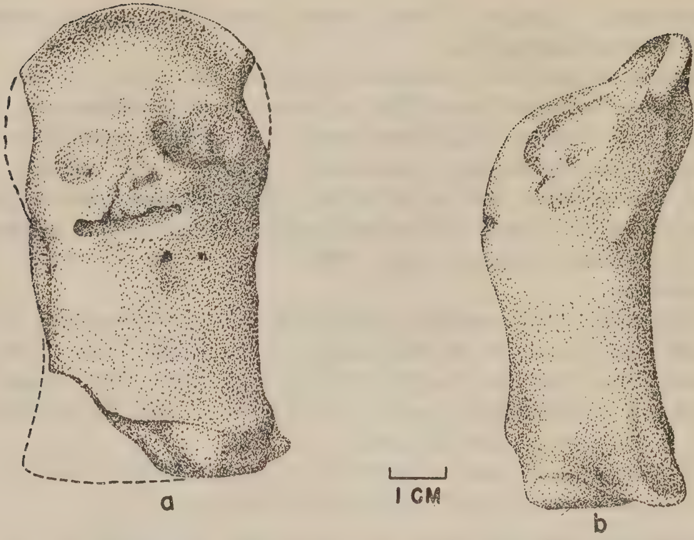

FIGURE 30.—Pottery figurine (Aristé Plain paste) from A-11—Montanha de Aristé, Cave 2, Aristé Phase.

Figurine.—The crude Aristé Plain human figurine (fig. 30, *a*, *b*) is a rusty brown except the diadem hairdo and face, which are painted black. A band was left unpainted on the face in the area corresponding to the forehead. No anatomical features are indicated except the head with the eyes, nose, and mouth gouged out on a very grossly modeled face. The workmanship is extremely crude and the result asymmetrical. The lower part flares outward slightly to a flat base with an oval cross section measuring 3.4 cm. from front to back and 5.0 from side to side. The narrowest portion of the body is 2.5 by 4.0 cm. with the full figurine 8.0 cm. long.

No small jars or bowls were found associated with the burial vessels, nor did any of the sherd fragments represent miniature vessels. No European glass trade beads were found either inside any of the vessels or scattered in the cave.

The location of the whole or partially complete vessels in the following descriptions is shown on the ground plan (fig. 28):

Vessel A, a small, globular body of a flat-bottomed Serra Plain jar with the rim broken off, was found lying on its side with the mouth toward the rear of the east end of the cave. The body of the vessel with smoothed, light-tan surfaces is 20 cm. in diameter and 17 cm. high. The base diameter is 10 cm. and the neck diameter 9 cm. No bones were found inside, but many cremated bone scraps were scattered in the vicinity.

Vessel B is a large Aristé Plain jar with a flat base, an egg-shaped body (broken out on one side) and a short, vertical neck ending in an irregular, collared rim, averaging 4.7 cm. wide (pl. 20, *b*). One side of the body had been broken by falling rocks. The dimensions of the jar are: body diameter, 30 cm.; base diameter, 18 cm.; rim diameter, 21 cm.; body height, 21 cm.; neck height, 10.5 cm. The surface is well smoothed, with temper particles of quartz sand protruding.

A heavy, flat Aristé Plain disk, with a short, nubbin handle in the center of one face, lay near the mouth of vessel B, but its diameter of only 16 cm. makes it too small to have served as a lid to this particular vessel.

Vessel C, a small Aristé Plain jar, has a slightly concave base 9 cm. in diameter, an asymmetrical, globular body of 20 cm. in diameter, a slightly constricted neck with a diameter of 11 cm., and a cambered collar 14 cm. in diameter narrowing to a diameter of 12 cm. at the mouth. The wall thickness is 4 mm. Most of the rim was broken off, probably before burial. The vessel was found lying on its side, but remained partly filled with large gravel mixed with traces of cremated bones.

Vessel D is a round Aristé Plain bowl with a flattened bottom 12 cm. in diameter and walls curving out to a maximum body diameter of 28 cm., and inward again to a constricted mouth diameter of 17 cm. (pl. 20, *d*). The total height is 18 cm. The rim is of a form typically found on Aristé Phase bowls, a kind of collar produced by the exterior beveling of the rim edge. The exterior surface is well-smoothed. The interior was filled with fine, dry, sandy-loam containing cremated bones.

Vessel E, a Flexal Scraped bowl, is 15 cm. tall and 24 cm. in maximum diameter (fig. 31). Above the maximum diameter the walls slant inward slightly forming a beveled rim with a slightly constricted mouth 20 cm. in diameter, similar to that of vessel D. Below the waist, the walls extend inward at a much greater angle to join the base. Seen from above, the mouth is not circular and the jar is generally asymmetrical. In addition to the scraped decoration above the shoulder and along the rim exterior, paired applique buttons are placed at three equally-spaced intervals along the rim. The contents were missing because the bowl had been turned over.

Vessel F had been knocked over, broken and partially buried by spalled rock. It is a small asymmetrical, globular-bodied, Serra Plain jar with a flattened bottom 15 cm. in diameter and a short neck measuring 10 cm. in diameter. The rim had been broken off. The existing height is 22 cm. and the maximum body

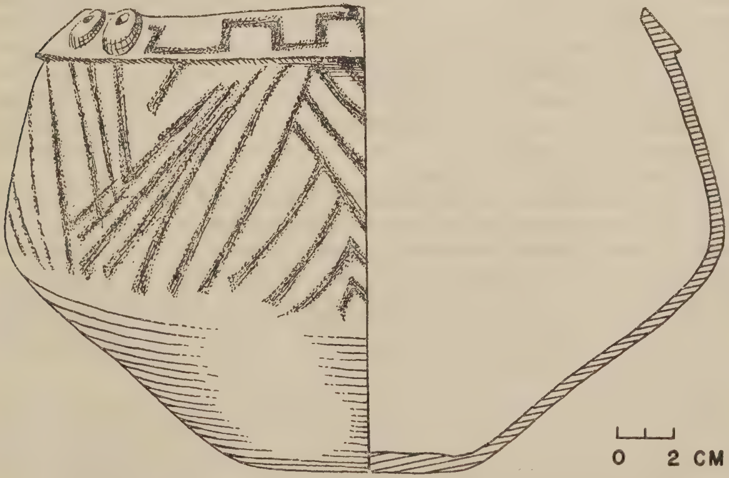

FIGURE 31.—Flexal Scraped bowl (vessel E) from A-11—Montanha de Aristé, Cave 2, Aristé Phase.

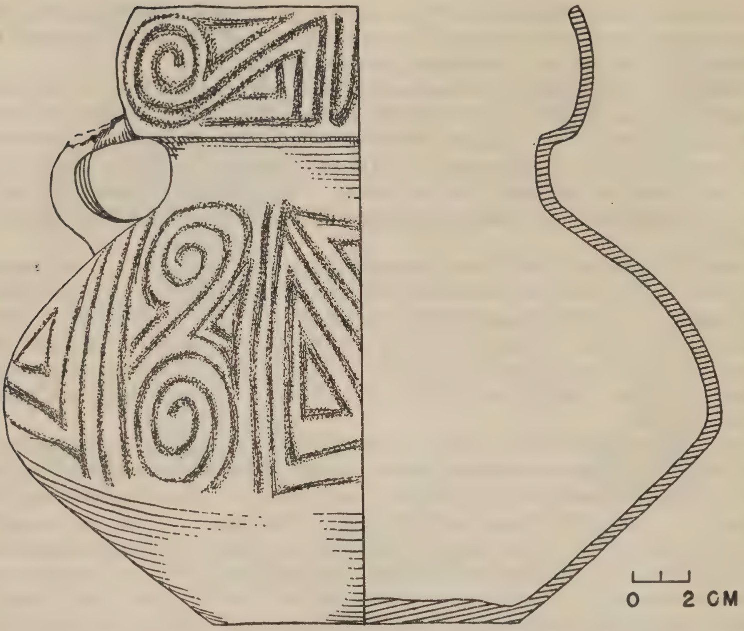

FIGURE 32.—Flexal Scraped jar (vessel G) from A-11—Montanha de Aristé, Cave 2, Aristé Phase.

diameter 20 cm. The wall thickness varies from 3–5 mm. A few scraps of cremated bones remained inside.

Vessel G, an excellent example of Flexal Scraped (fig. 32), rested on one side against the back of the cave. It has a slightly depressed, globular body 25 cm. in diameter, a flat base 10 cm. in diameter, a short (2 cm.) neck 14 cm. in diameter, and a cambered rim measuring 18 cm. in diameter. The overall height is 21 cm. Two strap handles, one of which remains in place, joined the rim with the shoulder. The upper body wall and the rim exterior are decorated with spirals and parallel lines in triangular fields made with a blunt, brushlike tool 5 mm. wide, leaving fine, parallel marks. The interior was filled with fine, tan soil, and small scraps of cremated bones.

Vessel H is a small and badly smashed Aristé Painted (red) jar. Fragments of cremated bones were mixed with the dirt surrounding it.

Vessel I, Aristé Painted, is similar in shape to vessel G, but lacks the strap handles (pl. 21, *a*). Base diameter is 8 cm., maximum body diameter 24 cm., neck diameter 11 cm., and rim diameter 13.5 cm. with the body wall thickness 5 mm. and the total height 22 cm. The exterior surface is badly eroded except on one side of the neck, just below the rim, where traces of red paint are visible. The vessel was partly filled with cremated bones and dirt.

Vessel J, part of a large, flaring rim, carinated Aristé Painted bowl lay partially buried beside a large rock in the dirt excavated by an animal in the east end of the cave. The surfaces are poorly preserved but traces of a black-on-white design remain on the inner side of the flaring rim. The reconstructed body diameter at the rim attachment is 26 cm., the rim diameter 36 cm., and the total height 14 cm. The small, slightly-concave base is 9 cm. in diameter.

Vessel K, Serra Painted, was the largest jar in the cave. It had remained upright but was buried up to the rim in dirt thrown out from the animal burrow. The long, straight-sided, insloping neck and flaring rim was joined to rounded shoulders (pl. 24, *b*). The total height was 40 cm., neck height 12 cm., mouth diameter 23 cm., diameter at the base of the neck 24 cm., body diameter 40 cm. and the flat base 20 cm. in diameter. The entire exterior is painted red.

Vessel L, a small Aristé Painted bowl was slightly incurved on the sides, terminating in a beveled rim (p. 21, *b*), which is painted red. It was the smallest vessel removed from Cave 2. The bowl measured only 9 cm. high, 15 cm. in body diameter, 10.5 cm. in mouth diameter, and 7 cm. in diameter at the slightly concave base. Fine white ash, particles of burnt bone, and one or two small burnt fragments of the cranium of a child were upon the bowl bottom with a mixture of black loam and gravel on top of them.

Vessel M, a large, tall Aristé Plain jar, was broken into two large pieces and almost completely buried against the rear wall. It is similar in shape to vessel B except for a short, outflaring rim. The total height is 35 cm., body diameter 28 cm., neck diameter 18 cm., and mouth diameter 23 cm. The surfaces were eroded, revealing abundant quartz-sand temper.

Vessel N was partly covered by the talus wash that had come around the edge of the cliff into the west end of the cave. It is an Aristé Plain bowl 19 cm. tall, with a slight, flat pedestal base 5 mm. high and 11 cm. in diameter. The sides curve outward to the maximum body diameter of 28 cm. and then rise almost vertically to a slightly flaring rim 30 cm. in diameter (pl. 20, *a*). The bowl had been filled with cremated bones, fine gravel, and light-tan, sandy soil.

Vessel O, a carinated bowl, represents Flexal Scraped. It has a simple scraped design around the rim and is similar in shape to vessel E except that the rim is cambered instead of beveled. A much larger bowl than any so far described, it had been broken into two large fragments and many smaller ones by spalled-off rocks. The reconstruction measured 56 cm. in diameter on the body, 15 cm. at the base, and 48 cm. at the mouth, with the total height 36 cm.

Vessel P was broken and completely buried by dirt from the animal's burrow. The globular Serra Painted jar, measuring 45 cm. in diameter and 50 cm. in body height, did not have the neck or rim intact and no fragments were found. Around the shoulder is a band 8 cm. wide occupied by a curvilinear, meandering scroll (fig. 33) painted in red on the natural, light-tan surface. The limits of this design area are marked by broad (3–4 mm.), shallow, incised lines. The exterior surface is smooth and even, with smoothing tracks visible except in the region of the painting.

Cave 3, located 300 meters north of Cave 1 and a little northeast of Cave 2, was formed by a large boulder supported on two granitic outcrops. The mouth, which opened to the south, measured 2 meters wide and 3 meters high, with the cave itself 6 meters wide and 4 meters deep. Animals had used it as a lair and the floor was thickly covered with bat dung. The sherds of 7 vessels were found, all located in a cluster 1 meter inside the cave mouth. The jars and bowls were so badly broken that partial reconstruction could be made of only two. Four were Aristé Plain and 3 Aristé Painted. One of the large Aristé Painted jars with red paint had an elaborate, insloping, cambered rim 5 cm. wide with two human faces modeled on it (figs. 34, 35). Mouth diameter was 12.5 cm., combined neck

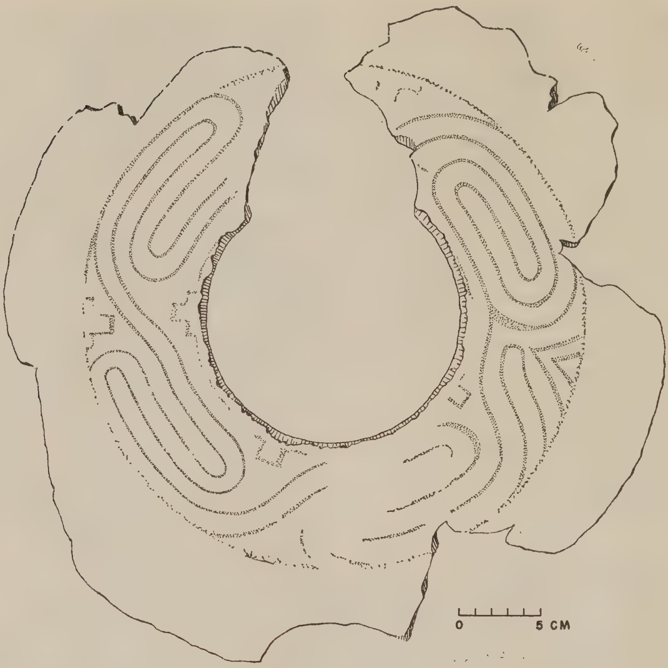

FIGURE 33.—Serra Painted design on the shoulder of vessel P from A–11—Montanha de Aristé, Cave 2, Aristé Phase. Stippled area denotes red paint upon the natural tan surface of the vessel.

and rim height was 7.0 cm. and the estimated body diameter, 36.0 cm. Scattered flecks of cremated bones were noted on the cave floor near the broken vessels.

SITE A–12—CRUZEIRO

The habitation site of Cruzeiro is almost 10 km. due north of Site A–10, on a bank 5 meters high along the west side of the narrow and deep Igarapé da Rasa (fig. 1; pl. 6, *b*). On the opposite side of the *igarapé* the Campos do Cruzeiro, an open rolling plain with scattered groves of trees, stretch to the north, east, and south. The Amapá Air Base is about 15 km. to the northeast. When this area was cut and burned for a garden of the Fomento de Agrícola, sherds were observed on the surface. They were sparsely scattered to a depth of 5 cm. in an area roughly 100 meters square in a portion of the forest where the trees had been much smaller than the surrounding virgin growth. Many of the sherds were refired in the intense heat generated during the burning of the slash, a factor which had to be taken into consideration in making the ceramic classification. Of the 529 sherds, 339 or 64.0 percent were Serra Plain, 176 or 33.1 percent Aristé Plain,

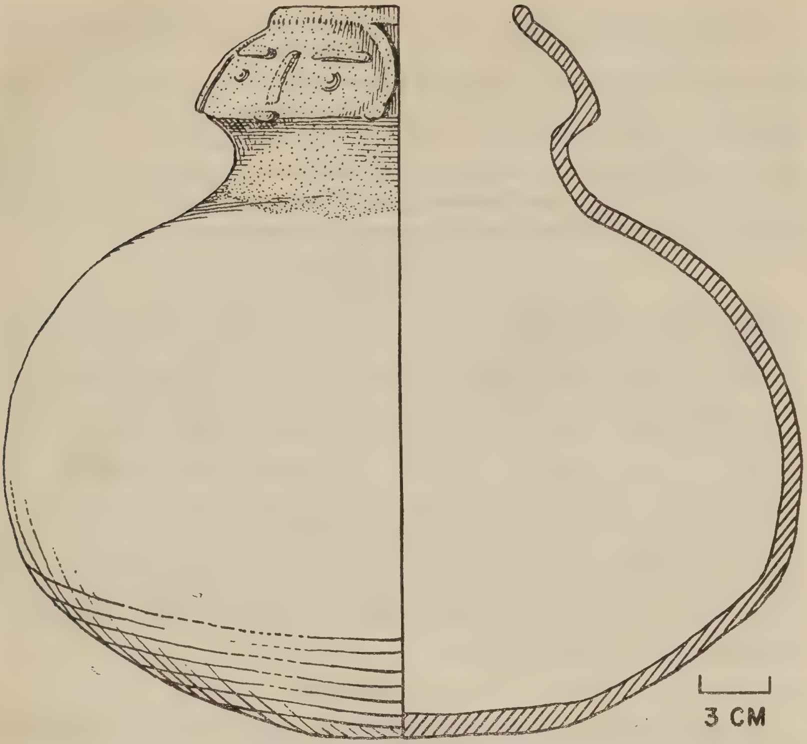

FIGURE 34.—Reconstruction of Aristé Painted vessel with anthropomorphic face from A-11—Montanha de Aristé, Cave 3, Aristé Phase. The stippled area denotes red paint.

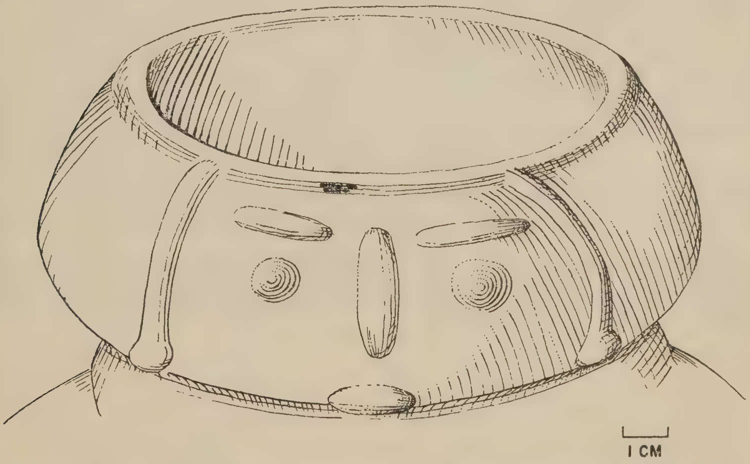

FIGURE 35.—Detail of the anthropomorphic face on the Aristé Painted vessel shown in figure 34.

11 or 2.3 percent Daví Incised, 2 or 0.4 percent Flexal Scraped, and 1 or 0.2 percent Unclassified. In addition to the pottery, the following objects came from Site A–12: 2 natural iron concretions, a fragmentary hammerstone, and 2 granite fragments, probably also from hammerstones. The broken hammerstone fragment (4.3 × 3.0 cm.) is rounded, of granite and suggests deliberate shaping by pecking. The larger fragmentary pieces of granite without definite shape have slightly battered edges suggesting use as hammerstones.

SITE A–13—MATAPÍ

One of the two appearances of the Aristé Phase south of the Rio Araguarí-Amaparí is this campsite in the headwaters of the Igarapé Inglês, a branch of the upper Rio Matapí (fig. 1). The site was found in the garden of the Minas de Ferro, which is located in a rocky, hilly, heavily forested area surrounded by upland savanna about 15 km. south of Porto Grande. In spite of extensive excavations for the preparation of gardens, sherds were found in only one spot approximately 2 by 2 meters on a slope 5 km. above the *igarapé.* These 81 sherds belong to 3 vessels, 2 Aristé Plain, and 1 Daví Incised. The absence of soil discoloration together with the sparsity of sherds and their concentration in one spot suggests that this was a temporary campsite rather than a village.

SITE A–14—MACAPÁ

During the 1945 excavations for water mains in the Praça Barão do Rio Branco of the city of Macapá, a row of burial urns had been found with their rims just a few centimeters below the surface. One complete specimen and the sherds were deposited in the Museu Territorial in Macapá. During similar excavations in December 1948, on the east side of the same Praça, three similar burial urns were encountered about 100 meters east of the original find. The bases of two of these were some 50 cm. below the surface, that of the third was 1.05 meters down. Fragments of unburned bone were said to have been found in the jars mixed with dirt. The deepest vessel contained a necklace of 10 drilled shells. Each individual shell bead is 4.8 to 6.0 cm. long and tapers toward each end from a diameter in the middle between 1.1 and 1.5 cm. The smallest end of each is biconically drilled 1 cm. from the tip with the hole narrowing from 4 mm. at the surface to 2 mm. in the center.

The fragments of the jars, as well as the complete one, were studied and analyzed in the light of the ceramic types of the Territory of Amapá. Eight vessels were Serra Plain and 3 Serra Painted with bands of red 9 to 10 cm. wide from the rim to the shoulders. The complete jar has high shoulders, a short neck, an outflaring, thickened, folded-over rim, 2.0 cm. wide and 1.4 cm. thick. The jar is 35 cm. high with a waist diameter of 31 cm., a mouth diameter of 30 cm. and a slightly rounded base 19 cm. in diameter. The sherds contain fragments from two flat-based, open bowls, measuring 22 and 25 cm. in mouth diameter with an estimated height of 12 cm.

In spite of these extensive excavations, which have involved the digging of deep trenches along nearly every street in the entire city of Macapá, the finds just described are the only ones that have been made. No loose sherd material or refuse trash has ever appeared.

SITE A-15—VILA VELHA [11]

An Indian cemetery has been known for some time to exist on a slight rise of land within the present limits of Vila Velha on the north margin of the Rio Cassiporé (fig. 1). Sr. Eurico Fernandes examined the site before it was destroyed by the expansion of the village. He excavated one complete burial urn, taking photographs and notes. A dark humus layer extended from the surface to a depth of 12 cm. with brown clay beneath, indicating a cemetery rather than habitation refuse.

The mouth of the jar was covered with an inverted, open, plain-ware bowl. Inside were cremated bones mixed with sand, 373 European glass trade beads, a small (6.2 × 3.5 × 0.8 cm.), notched, semi-polished ax of diabase with a well-ground bit and a 1-mm. notch 1.2 cm. from the butt end, and 7 *murakitãos* or pendants of nephrite. Of these pendants 5 were cylindrical, perforated beads and 2 were stylized pendants, one in the form of an insect. Unfortunately, these objects have been scattered among various individual collectors; therefore a more detailed description was not available.

Some of the glass trade beads were fused into a mass as if they had been subjected to the same cremation as the bones; these were not included in the analysis or the tabulation of 373 beads representing the following varieties (pl. 25):

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[11] The following seven sites were not excavated by us; but their relatively good documentation, plus the fact that we were able to study firsthand the ceramic material from each, warrants their inclusion here to give a more complete picture of the Aristé Phase.

TABLE C.—*Glass beads from A–15—Vila Velha*

Color	Description	Count
Dark blue, almost black	Oblong to spherical, diameter 8–10 mm., length 12–15 mm., hole 2 mm.	8
Clear glass or dark blue	Large, hand-molded, 8-faceted beads ranging in length from 11–20 mm. with approximately the same diameter. Hole 3–5 mm.	45
Dark, serpentine green	Small, hand-molded, and 8-faceted, but only 8–11 mm. in length and diameter.	8
Milky, opalescent, bluish white.	Elongated to spherical but irregular. Called "wire-wound" by bead experts. Hole 3–4 mm.; bead diameter 3–15 mm., length 10–15 mm.	5
Clear glass, or dark blue, or amber.	"Bunch of grapes" or "raspberry" according to bead experts. Very irregular in both length and diameter, ranging from 7–10 mm. Hole 2–4 mm. Most of this sample clear glass color.	26
Clear glass with white stripes.	"Gooseberry" according to bead experts. Spherical of irregular lengths with widely to closely spaced, milky-white stripes inside. The ends are usually square but some are irregular. Length ranges from 4–13 mm. and diameter 5–10 mm.	274
Dark blue	Small, spherical; diameter 5 mm	2
Clear glass	Spherical to oval, small; diameter 3–4 mm	5
Total		373

The jar, an excellent specimen of Serra Painted (red and black on white) both in form and ornamentation, has a symmetrical, double-recurved body profile, a flat base and a short, vertical neck (pl. 25). It is 43.5 cm. high with a mouth diameter of 20 cm., a base diameter of 10 cm. and a maximum body diameter of 42 cm. with the recurved collar measuring 28 cm. in diameter at the largest bulge. The exterior surface is smoothed and, in the area where painting occurs, white slipped. The designs are executed in red and black and consist of square and curved spirals composed of paired or triple, parallel lines, typical motifs of Serra Painted. The specimen and most of the beads are deposited with the Comissão Brasileira Demarcadora de Limites in Belém.

SITE A–16—ILHAS DO CAMPO

The Rio Uaçá flows into the Atlantic Ocean a few kilometers east of the mouth of the Rio Oiapoque, forming a narrow peninsula (fig. 1). This finger of land is covered with grass except for the small, scattered groves of forest that mark slight increases in elevation. A habitation site, measuring about 30 meters in diameter, is reported by Fernandes (personal communication) to be located in one of these patches of forest near the eastern tip of the peninsula, only a few kilometers from the Rio Oiapoque. A piece of fire-burnt quartz, 104 sherds, and a small, stone, hand ax were collected from the surface; no excavations were undertaken. The ax was made of a waterworn, basalt pebble, well polished, with a sharp, beveled bit and a butt end that had been used as a hammerstone; measurements: 8.0 cm. long, 2.2 cm. thick, bit 4.0 cm. wide, poll 5.0 cm. wide, butt 1.6 cm. wide. The sherds, now in the private collections of Srs. Eurico Fernandes and Frederico Barata in Belém, represent the following types: 56 sherds or 54.0 percent Serra Plain, 2 or 1.9 percent Serra Painted, 29 or 27.9 percent Aristé Plain, 1 or 0.9 percent Aristé Painted, 1 or 0.9 percent Daví Incised, 13 or 12.6 percent Uaçá Incised, and 1 or 0.9 percent Unclassified. A few fragments of Serra Plain are from unusually deeply grooved graters.

Three face adornos or figurines are included, 2 Serra Painted and 1 Serra Plain. The latter is modeled in the form of a head, probably monkey rather than human, with the eyes, mouth, and nose formed by low relief, incisions, and punctates; the head measures 4.7 cm. wide, 1.6 cm. through the thickest part, and extends 2.2 cm. from the slightly constricted neck. Although it is impossible to determine with certainty whether the face is a fragment of a figurine or a rim adorno, in this case the latter possibility is suggested by the curvature of the lower edge (pl. 26, *c*). The other two examples appear to represent human faces. The largest (pl. 26, *b*) has an elongated body topped by a realistically modeled face with a complicated hairdo; the features are made by low applique, punctate, and light incision. Total height is 9 cm., maximum head width 5.5 cm., thickness 2.6 cm. The entire surface is smooth, showing traces of white slip upon which red paint had been applied. The lower edge has a smooth break resulting from application when too dry, thus making a poor bond. Nevertheless, it was attached to something else; whether a rim or the basal part of a figurine cannot be determined. The features of the third face (pl. 26 *a*) are more gross than the other two. Again the eyes, nose, mouth and hair are shown by a combination of low modeling, incision, and punctates. The front of the head is white slipped with fine crackle lines, while the back is unslipped. Width of the face at the ears is 8.5 cm., thickness at the nose 2.5 cm. Although the tips of the base are broken off, the lower edge is smoothed over and finished. This clue suggests that some of these faces may be small figurines of the style from Site A–11 (fig. 30, *a*, *b*) rather than rim adornos.

SITE A–18—MAICA

On the north side of the Rio Cunaní, about 8 km. upstream from the present city of Cunaní, rise a series of low, rolling, forested hills surrounded by savanna. On one of these, called Maica, a site was located. This hill is 200 meters in a north-south length and 90 meters in an east-west width and rises 30 meters above the plain, with its flanks forming the bank of the Rio Cunaní. After a *caboclo* had cleared the summit for a garden, sherds were noticed scattered sparsely over an area conforming to the general contour of the top of the hill, 75 meters long and 10 meters wide, with the deepest sherd 5 cm. below the surface. Both topography and ceramic features closely duplicate those at Site A–12—Cruzeiro. Of the 222 sherds collected in March 1949 by Sr. Newton Cardoso of the Museu Territorial, Macapá, and later analyzed by us, 124 or 56.0 percent are Serra Plain, 72 or 32.4 percent Aristé Plain, 2 or 0.8 percent Daví Incised, 22 or 10.0 percent Uaçá Incised, and 2 or 0.8 percent Unclassified. Nonceramic objects included 6 quartz and 4 miscellaneous natural rock fragments and 1 fragment of a roughly shaped granite hammerstone (6.5 × 5.0 × 3.0 cm.).

SITE A–19—RENOVADO

A few kilometers below the village of Cunaní, Sr. Cardoso visited another site on a hilltop along the Igarapé Holandia near its junction with the Rio Cunaní. At the time of this survey work he was not aware of the fact that he was working in the same site excavated by Goeldi in 1895, for, today, the hill is called Renovado instead of Monte Curú.[12] He found one shaft grave empty, while another had 56 sherds representing 4 vessels (2 Serra Painted and 2 Serra Plain) scattered among cremated bones, suggesting previous excavation. The sherds, including a flat base sherd with several pierced holes, conform to the style reported by Goeldi. The tabulation of the number of vessels in each pottery type from Site A–19 (Appendix, table 11) includes Goeldi's specimens and Cardoso's, both of which were analyzed by us.

SITE A–20—VILA CUNANÍ

A few artifacts were recovered from a small excavation in the center of the city of Cunaní on the Rio Cunaní. The sample collected by Sr. Cardoso represented a mixture of colonial clay brick, porcelain ware, hunks of coal, modern *caboclo* pottery and Aristé Phase ceramics. There were 15 sherds of Serra Plain, of which 2 were from graters, and 1 sherd of Serra Painted. The ceramics resemble the material from Maica, Site A–18. Owing to the present location of buildings upon the aboriginal habitation site, extensive excavations were not feasible.

SITE A–21—PRACUÛBA

Habitation Site A–21, on the north shore of Lago Pracuûba, about 2 km. northwest of Site A–9—Relógio, was excavated by Sr. Cardoso. Although he attempted the stratigraphic method, the discovery of an airplane latch in the second level confirmed the suspicion that the site was too much disturbed from modern manioc gardening to give reliable stratigraphic information. The refuse layer was a black loam in contrast to the light-brown, sterile clay. Of the 241 sherds recovered from the 1.5- by 1.5-meter test, 208 or 86.5 percent were Serra Plain,

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[12] The descriptive details of the site, burials, etc. are in Goeldi, 1900, pp. 22–24, and are discussed in the comparative section of this Phase, pp. 126–128.

5 or 2.0 percent Serra Painted, 27 or 11.1 percent Aristé Plain, and 1 or 0.4 percent Daví Incised. Six of the Serra Plain sherds are from graters. A partially restorable Serra Painted bowl is similar in shape and design motif to the carinated bowls from Cunaní found by Goeldi (1900, est. III 2a, 4, 8).

SITE A–22—CONCEIÇÃO

Sr. Newton Cardoso visited this site on Fazenda Santa Maria da Prainha on the north bank of the lower Rio Amapá Pequeno during the rainy season. The slight, forested elevation surrounded by savanna on which the site was located is known by the name of Ilha das Igaçabas, and is reputed to contain whole vessels. However, it is one of the few areas to remain above water during the rainy season, and the weight and tramping of thousands of cattle that seek refuge on it have reduced the ceramics, which are 5 cm. or less below the surface, to gravel. Only 91 sherds could be collected in spite of extensive digging. These resemble the ones from Site A–7—Amapá. Seventy-nine or 87.0 percent were classified as Serra Plain, 3 or 3.3 percent Serra Painted, and 9 or 9.7 percent Aristé Plain. Nonceramic objects included 1 small fragment of a hammerstone and 3 hunks of burnt clay.

DATA FROM OTHER INVESTIGATIONS

Less previous work has been done in the region between the Rio Oiapoque and the Rio Araguarí-Amaparí than in the southern part of the Territory of Amapá. Beyond the information from Nimuendajú's work and Goeldi's excavations and collections of Cunaní materials, there are only occasional references by early explorers and travelers to an "Indian site" or a "pot believed to be of Indian origin" without details that would permit their use in a specific comparative study. The following information is arranged geographically beginning with the Rio Oiapoque and moving south to the Rio Araguarí-Amaparí.

RIO OIAPOQUE SITE

Hamy describes an aboriginal burial urn found by Mgr. Emonet during one of his trips on the Rio Oiapoque (Hamy, 1897, pl. 57). The jar is plain ware with a reddish color, which could be Serra Plain, and has a lid "in the form of a hat" with a reddish, well-smoothed surface (fig. 36). The jar measures 40.0 cm. in height and 36.6 cm. in diameter, with a flattened base and a high bulbous waist. The lid, inverted over the jar mouth, is 17 cm. deep with a mouth diameter of 35 cm. Both the shape and the comments about the surface of the lid suggest that it represents the red variety of Aristé Painted. Experience in dealing with these early accounts suggests that there is

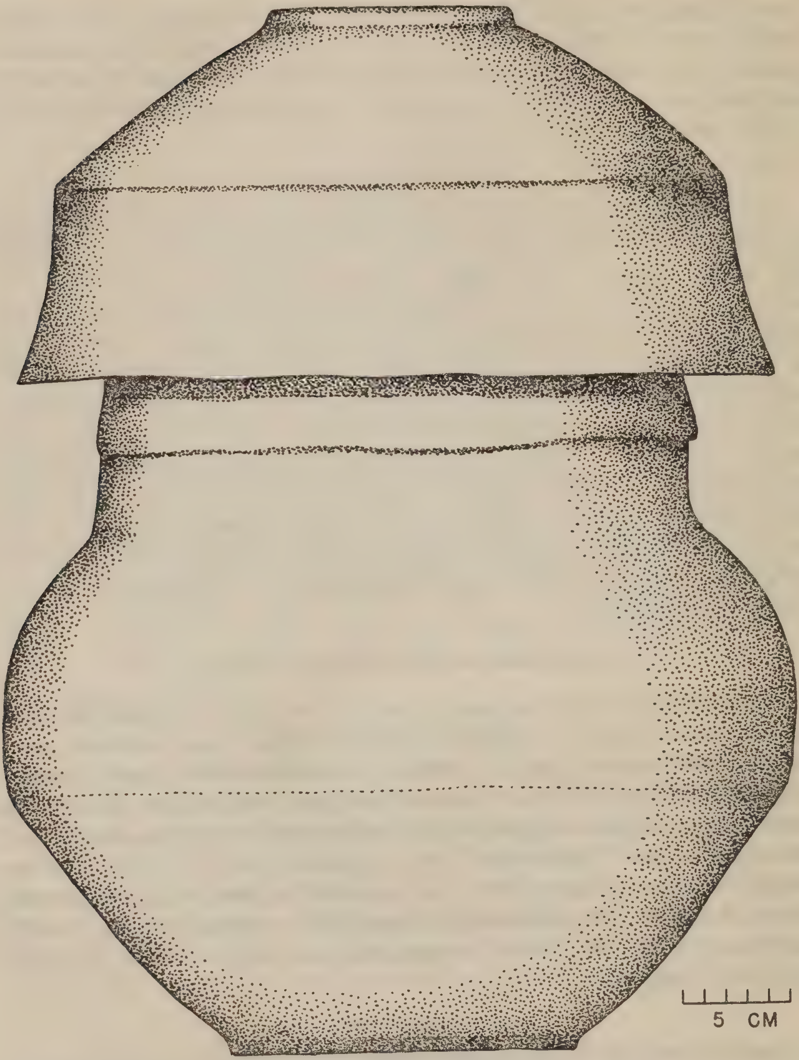

FIGURE 36.—Burial urn and lid of the Aristé Phase found by Hamy (1897) on the Rio Oiapoque. The urn is probably Serra Plain and the lid Aristé Painted.

little reason to take much stock in the author's caption, "Urne funeraire des Oyampis de l'Oyapok" (ibid.). The tendency is to attribute all such finds as belonging to the Indians living in the area at the time the jar was found and there is no evidence to indicate that this is an ethnographical specimen. All of its characteristics associate it with archeological examples of the Aristé Phase.

RIO UAÇÁ SITES

In his discussion of the archeology of the Lower Amazon, based on Nimuendajú's notes and specimens in the Göteborg Museum, Linné reproduces a map showing the location of 4 cemetery and 2 habitation sites on the middle to upper drainage of the Rio Uaçá (1928 a, p. 584). His information is unfortunately very sketchy, but Rydén's study of Nimuendajú's notes and collection (Rydén, MS.) adds a few more details.

At the burial site of Courbaril, Nimuendajú found a large, flat platter with a white-slipped interior painted with black lines; this vessel is undoubtedly Serra Painted. Other fragments comprise graters with deep grooves on the interior, comparable to the ones from Sites A–12 and A–16.

Another burial site, Coumarouman, had most of the vessels broken by roots. From Rydén's (MS.) description of traces of white slip with black painting or red-brown to black surfaces, of elongated flanges opposite each other on the rim, and of carinated vessel shape with flat bases, there seems little doubt that this pottery is typical of the Aristé Phase.

RIO ARACAUÁ SITES

Kaupí.—Nimuendajú (1926, pp. 85–86; Rydén, MS.) mentions that the modern Palicur Indians when digging a grave often encounter an old burial site of their ancestors; they show no reverence for the site, dig up the urns, break them, and take any offerings such as beads. While exploring the Rio Aracauá, Nimuendajú went to a burial site known as Kaupí. Here a local Palicur magician dug up about 12 burial urns, cleaned them out, washed them, and when told that they should have been left in the ground, he broke them and threw the fragments away. Nimuendajú rescued some of the fragments which Rydén illustrates and describes (Rydén, MS., figs. 30 A–E, 28 A–B). One vessel of this group was illustrated in an annual report of the Göteborg Museum (1927, p. 77). From these data it is evident that the pottery is representative of the Aristé Phase. The flat perforated base is typical of the vessels and sherds from the Cunaní burial urns (cf. p. 128); the polychrome or bichrome painting in black, brown, red brown or orange brown on a white slip featuring parallel lines and interlocking units is typical of Serra Painted; the sherds grooved on the interiors are identical to the graters found from Sites A–12 and A–16. Nimuendajú (Rydén, MS.) undertakes an extensive discussion on the subject of these "grinding-bowls," as he calls them, and indicates that old Palicur Indians in the Kaupí region mention the fact that their ancestors used pottery "grinding bowls" for manioc whereas today they use wooden boards with inserted fragments of iron.

Ulakté-Uni.—Near Ulakté-Uni on Mont Ukupí along the Aracauá River is a small cave which had fragments of burial urns scattered on the floor. The pottery was white slipped and painted in red curvilinear designs, with one sherd modeled in the style of the anthropomorphic faces on the necks of Cunaní vessels. Comparison of the Cunaní vessels with illustrations (Nordenskiöld, 1930, pl. 23; Linné, 1928 a, fig. 2, p. 585) and descriptions (Rydén, MS.) of these sherds show them to be identical to the Serra Painted pottery found by Goeldi at Cunaní and by us at Sites A–11 and A–21. Nimuendajú made special effort to look for trade materials and the previous contents of the vessels or bone scraps on the cave floor, but none could be found.

Mawir-Mini.—At this burial site Nimuendajú (Rydén, MS.) found a vessel that was related in shape to those he had found at Monte Mayé. No traces of paint or slip remained on the exterior, but it was so badly weathered that it is impossible to determine if the vessel originally had been plain or painted. Since its shape is similar to Monte Mayé vessels, this burial site undoubtedly belongs to the Aristé Phase.

CUNANÍ SITES

The best known collection from the Territory of Amapá is the one made by Goeldi in 1895 from the Rio Cunaní (1900, pp. 1–43). It includes a large number of jars and bowls recovered from the bottoms of two shaft graves sunk vertically into the ground with enlarged alcoves at the base (fig. 37). All the urns contained traces of human bones mixed with dirt, and although he mentions some being cremated, Goeldi is not always explicit on this point. The existence of secondary burials, as well as cremated remains, would place this cemetery in the Aristé Phase pattern, such a combination having occurred at Site A–11, Cave 2. No glass trade beads were associated with any of the vessels. However, the fact that the faces of three of the five anthropomorphic jars have well-modeled beards along the chins (cf. Rio Maracá anthropomorphic urns, p. 78) might be evidence of their post-Columbian manufacture in attempting to copy the full beards of the European conquerors onto ceramics.

Our pottery analysis of these vessels collected by Goeldi, now deposited in the Museu Goeldi in Belém, and the sherds taken by Sr. Cardoso from the same spot, Site A–19, showed 17.4 percent to be Serra Plain and 82.6 percent Serra Painted. The flat-bottomed, angular-sided, cambered-necked jars and wide-mouthed, carinated bowls are typical Aristé Phase forms. The interlocking, curvilinear, meandering scroll motifs of vessels 1, 3, 5, and 8 in Goeldi's report of the site (1900, est. I, II, III) are duplicated in style, color, and method of execution on several sherds from Sites A–11 and A–21 (fig. 33).

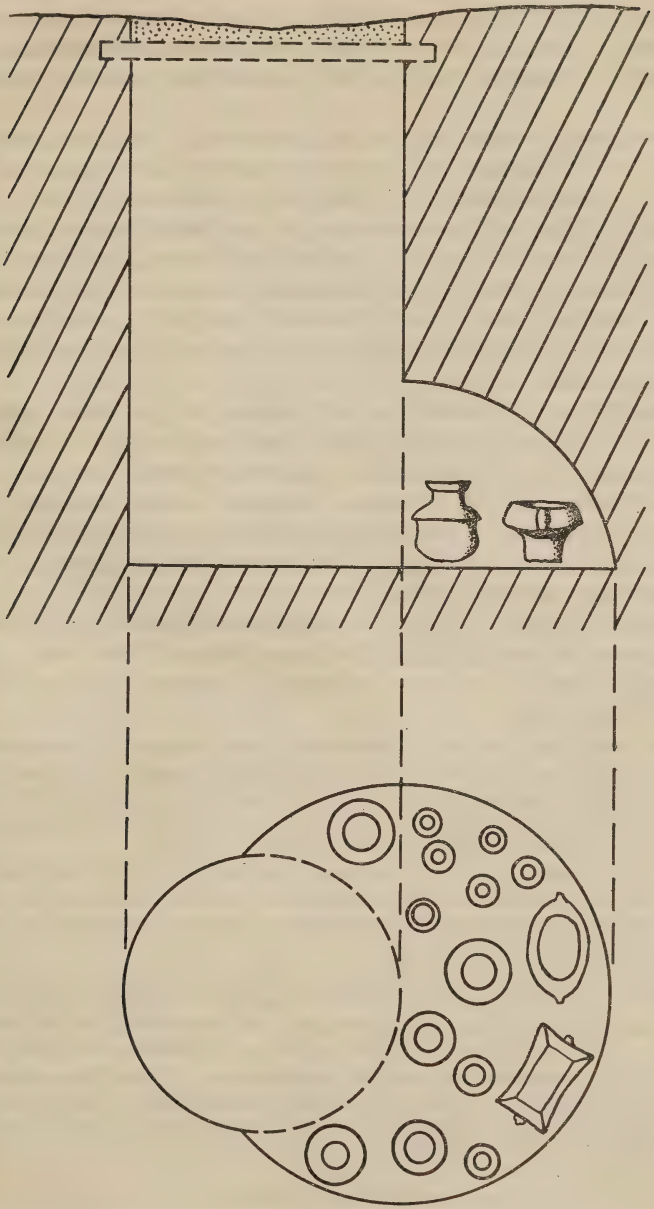

FIGURE 37.—Profile and top view of shaft-burial at the Cunaní Site, Aristé Phase (After Goeldi, 1900.)

The perforations through the base of the majority of the bowls and jars occur also at Kaupí on the Rio Aracauá. Since all these vessels were used for burial, the only plausible explanation of the holes would be to allow drainage, since no lids covered the vessels in the shaft graves.

The unusually constructed shaft grave with a widened-out recess and alcove 2.10 meters in diameter, reached by a vertical shaft, 1.20 meters in diameter and 2.50 meters deep, and covered with a large rock-slab lid (fig. 37) does not recur at any other known site in the Territory of Amapá except one visited by Nimuendajú (Rydén, MS.) at Rio Novo (pp. 41–42). With the exception of two small cemeteries in which the jars were buried, Sites A–14 and A–15, burial urns were always set on the floor of small rock shelters, caves, or along the faces of large rock outcrops.

Although the habitation Site A–18, Maica, is upstream on the same river, the difference in ceramic styles and percentage occurrence of pottery types (Appendix, table 11; fig. 46) between it and the Cunaní shaft cemetery, Site A–19, argues against a close relationship. A better correlation on ceramic type can be made with Site A–20, situated underneath the modern village of Cunaní; its proximity also makes this the more likely associated site.

Coudreau (1887) describes his excavation of funerary urns from an Indian cemetery on the upper Rio Cunaní about 15 km. from our Site A–18 (fig. 1) and the existence of other sites along the river with estimates of their age:

> I found seven funerary urns in a burial shaft in the village, and I compared them with the burial urns I had visited at the mountain of Counani. These urns, added to those of the large encampment located on an island in the river three days distant by canoe, the remnants of which I have been able to study, permit me to infer a general history of the Indian civilization on the river. . . .
>
> Fleeing the European, the Indians moved successively upriver until the site of the present town of Counani. Even today, the remnants of four or five ancient encampments, together with the cemeteries . . . can be distinguished between the town and the mouth . . .
>
> When the Jesuits, in the 18th Century, founded a mission on the river, they had a reason for establishing it not far from the location of the modern town, and this reason was probably that of the contemporary existence of the principal village on this site. The urns I found in the burial shafts are doubtless of that epoch, to judge by the remarkable perfection of the designs. . . . The three-quarter cremated bones, rotted by humidity and filled with dirt, that I found in the urns, did not seem to me to be of any use for the chemical determination of their antiquity. [Coudreau, 1887, pp. xx–xxi.]

MONTE MAYÉ SITE

The site of Monte Mayé, on a small mountain 100 meters high on the coast along the south side of the mouth of the Rio Cunaní, has been known for a long time by explorers of the region (Goeldi, 1900, footnote, p. 17). Both Goeldi and Nimuendajú (Rydén, MS.) develop in some detail the historical data about the Indians of the area gathered by the missionaries and explorers in the 17th and 18th centuries. However, the most specific information from an archeological standpoint comes from the explorations of Nimuendajú in 1923, part of which have been published (Linné, 1928 a, pp. 587–588) and the rest compiled and annotated in manuscript form by Rydén (MS.).

There were two surface burial sites on the ridge of Monte Mayé, both of which had been so badly plundered that sherds, bones, and miscellaneous objects were partially buried and mixed with earth and leaves. Local inhabitants had carried away pendants and beads and even burial urns, which they used as water or cooking jars.

At the first burial site (called Urn Site A) Nimuendajú found fragments of 12 jars scattered haphazardly over the surface with two complete vessels in front of a small rock shelter. From the surface near several broken jars came bone fragments, human teeth, a tooth necklace, beads, rusty iron nails, a mirror, *murakitãos* (pendants) of greenstone, and pierced thimbles. *Caboclos* stated that they had also found lockets with pictures of Catholic saints in them. From Rydén's descriptions of the vessels and sherds Nimuendajú sent to the Göteborg Museum, plus our examination of some of the photographs and drawings, there is no doubt that the first burial site of Monte Mayé is representative of the late Aristé Phase material as typified by the polychrome or bichrome painting and vessel shapes so characteristic of Serra Painted.

The second burial urn site (Nimuendajú's Urn Site B) is located on the same ridge, 100 meters away, in a place without natural stone outcrops. The fragments of 7 different urns were on the surface along with scattered bones, a broken iron knife, glass beads, a mirror, brass bells, and a greenstone *murakitão*.

Nimuendajú mentions several upturned lids at the foot of the hill, which he designated as Urn Site C, but he concludes that since these were the only fragments, they were probably left there by a traveler who started to carry things away from Monte Mayé but changed his mind (Rydén, MS.).

From Rydén's descriptions of the vessels and sherds (ibid.), Linné's comments (1928 a), Nordenskiöld's illustrations (1930, fig. 2a), plus our examination of some of the photographs and drawings, there is no doubt that these burial urn sites of Monte Mayé contain late Aristé Phase material.[13] From the presence of glass beads, mirrors, and metal objects it is obvious that the cemeteries date from post-Columbian times. The brass shells and thimble were sent to a specialist in

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[13] For full descriptive and illustrative details see Ryden's compilations and annotated study of Nimuendajú's archeological investigations in the Territory of Amapá (Rydén, MS.).

European cultural history, Prof. Nils Lithborg of the Nordic Museum in Stockholm, who "without the least knowledge of where or when they had been found, placed the period of manufacture between 1450 and 1530 AD" (Linné, 1928 a, pp. 587–588). Nimuendajú (Rydén, MS.) gives several pages of discussions about the age of these sites based on the glass beads as suggesting 17th century, but Rydén feels they could be as late as 18th century.

Some of the burial urns were perforated along the upper rim with corresponding holes along the edge of the lid. Fragments of small animals modeled on top of the lids came from this site. Several scholars have noted that these zoomorphic figures on perforated lids show similarity to those from the Atures on the Rio Orinoco (Linné, 1928 a, p. 589, fig. 4; Nordenskiöld, 1930, fig. 2, *a–b*, p.18). Although nothing like them came from other Aristé Phase cemeteries, small modeled animals are found on the outer rim of certain of the large bowls from Goeldi's excavations at Cunaní (1900, est. I 7a, b; and III 1a, b, c; 2a; 22).

ILHA DO CARÃO SITE

Nimuendajú reports briefly on his excavations of Ilha do Carão in a swamp at the mouth of the Igarapé Mayacaré, south of the Rio Calçoene. Unfortunately, the descriptive data are confusing, contradictory, and inadequate (Linné, 1928 b, p. 75–76; Meggers, 1948, p. 162; Rydén, MS.). Nimuendajú speaks of a mound 2.20 meters high with three stratified layers, but says these layers do not appear to correspond with those of distinct cultures. Unfortunately, the catalog of the specimens does not list them by level, but Rydén felt that he was able to separate some of the materials. However, this is not as fruitful as it might seem, for the illustrations and descriptions of the incised designs and traces of red and white paint on the pottery suggest that all the sherds represent the Aristé Phase pottery types of Uaçá and Daví Incised and Serra and/or Aristé Painted. Since there is such a high percentage of incised pottery, this site is probably related to that part of the Aristé Phase represented by Site A–16—Ilhas do Campo. Even though Linné publishes Nimuendajú's map of the site and profile of the mound with the numbered artifacts in place (1928 b, fig. 3), the details of stratigraphy and the meaning of the numbered artifacts are not given. Although Nimuendajú mentions a dozen stone markers scattered irregularly on the mound (op. cit., pp. 75–76; Rydén, MS.), the profile shows stones throughout the mound arranged in such a way that the site suggests a burial place in which the urns were interred and then covered with dirt and stones. From the scanty data the stones at this site do not suggest alinements similar to those of the Aruã sites even if the stones were as large as some from the Rio Novo or José Antonio sites described by Nimuendajú. Although much is wanting in the way of more concrete information, without any doubt this site belongs to that part of the Aristé Phase characterized by a high percentage of incised pottery types. The stone axes are not distinctive enough to be assigned to a cultural horizon.

AÇAHYZAL SITE

This stone alinement on the Rio Flexal (Frechal) has been described in detail in the Aruã section (p. 43). Nimuendajú mentioned that "contrary to all other stone alinements a great number of vessel fragments were found. . . . The majority of these were coarse and undecorated; no painting; and some had coarsely incised decorations . . ." (Rydén, MS.). An examination of Rydén's illustrations of these sherds (op. cit., fig. 26) establishes the incised ones as typical examples of Uaçá Incised and Daví Incised. Since no complete vessels were found, the description of Açahyzal site suggests an old habitation site of the Aristé Phase, a portion of which had previously been used by the Aruã for the construction of stone alinements.

IGARAPÉ TARTARUGALZINHO SITES

Coudreau, in the description of his voyages to the Guianas (1887, pp. 49–50), mentions an Indian cemetery on the right bank of the Igarapé Tartarugalzinho:

> The burials were situated in a line, running exactly east-west and perpendicular to the direction of the river, which was about 20 meters away. They were about a meter apart and level with the ground in the middle of an area slightly wooded, indicating a relatively recent exploitation.
>
> These urns are of crude workmanship, without ornament, of poor clay. . . . Each had a little cover provided with holes for attachment. When discovered (about a decade ago, at the time when Magalhens excavated), they contained bones, which have since been dispersed. Above the small cover was a large cover of coarse pottery; this cover was hidden under a miniature mound. The eastern urn, probably the most beautiful, was the one taken by the apostolic prefect [to Cayenne, French Guiana].
>
> In the urn at the extreme west, a small urn more elegant than the others and probably that of an infant, I found some blue and white beads, the size of grains of wheat, which must have come from the necklace of the little Indian. . . . The second urn, going toward the east, contained large red and blue beads, a necklace of a man perhaps. The third contained only dirt . . .

Although his comments are not specific enough to classify the pottery with certainty, it is very likely that the vessels represent either Aristé Plain or Serra Plain. Sites of the Aristé Phase are common in the vicinity and the burial pattern suggests that of Sites A–10, A–11, and A–19.

ANALYSIS OF MATERIALS OF THE ARISTÉ PHASE

Pottery Type Descriptions

The ceramic study of the Aristé Phase is based upon an examination and classification of 2,156 sherds from habitation sites and 215 complete or restorable vessels from cemeteries. Utilizing the binomial classificatory system the following pottery types, arranged in alphabetical order, were established for the Aristé Phase.

ARISTÉ PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: Sand and crushed quartz particles ranging from 1–9 mm.

Texture: Clayey paste, very gritty with angular cleavage due to the large sand particles and hunks of crushed quartz. Paste mixture poor, weak, and friable. Sherd rings like a hollow tile or brick.

Color: Ranges from light, rusty orange to reddish orange; about 10 percent of all sherds have a gray paste with orange bands on either side of the core.

Firing: Oxidized, generally complete; fire clouds rare.

SURFACES:

Color: Light orange to dark rusty brown to a light tan on both surfaces; no constant correlation between exterior and interior color. White quartz particles of temper on the surfaces often give the sherds a speckled appearance.

Treatment:

Exterior—Well smoothed, fairly even and regular but not polished. Smoothing striations visible on only a few sherds. Large temper particles on the surface often give it a rough feel with crackle lines formed around these exposed particles. Coiling lines completely erased.

Interior—Not as well smoothed as surfaces just mentioned, but scraping tracks visible on 10 percent of the sherds.

Hardness: 3.

FORM:

Common vessel shapes:

1. Small to medium low-waisted or round-bodied jar with narrow, short neck and cambered collar (fig. 38–1; pl. 20, *b–c*).

   Rim: Cambered collar with a short rim vertical or extending outward 1–3 cm. from the neck. The lip is tapered, rounded or square with rounded edges. Mouth diameter 18–32 cm.; constricted neck diameter 10–26 cm.

   Body wall thickness: 7–12 mm.; majority 7–8 mm.

   Body dimensions: Neck and rim height 5–15 cm.; maximum body diameters 26–38 cm.; overall height 22–47 cm.; majority 30–35 cm.

   Base: Thickened, flattened, usually slightly concave with a prominent angular junction with the side walls. Depth of the concavity is 2–5 mm. with the base diameter 8–18 cm.

   Appendages: Rarely, a small strap handle from the collar to the jar neck or applique nubbins or ribs.

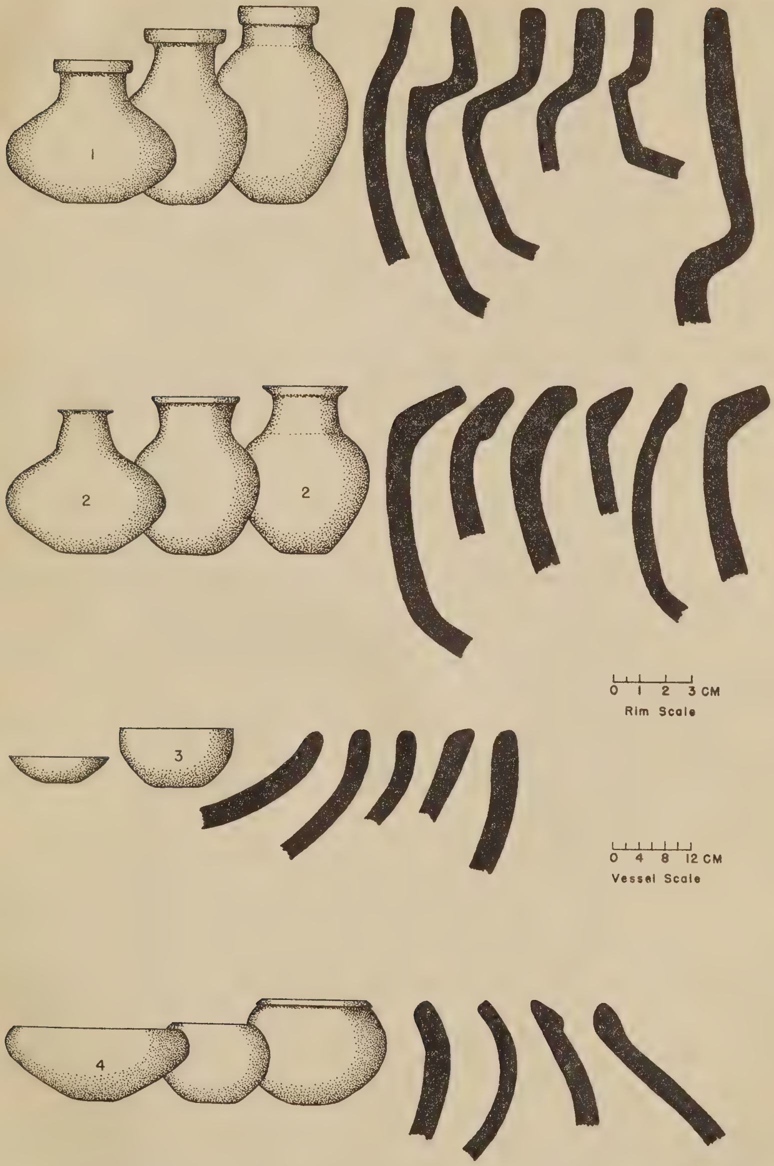

1
2
2
0 1 2 3 CM
Rim Scale
3
0 4 8 12 CM
Vessel Scale
4

FIGURE 38.—Rim profiles and vessel shapes of Aristé Plain, Aristé Phase (Appendix, table 12).

2. Short to medium-necked round or low-waisted jar with exteriorly thickened everted or outcurving rim (fig. 38–2).
   Rim: Everted, thickened exteriorly with a coil or strip, lip rounded or squared with rounded edges; rarely a direct lip. Mouth diameters 26–38 cm.
   Body wall thickness: 7–11 mm.; majority 7–8 mm.
   Body dimensions: Neck diameter 20–32 cm., neck height 3–10 cm., overall height 25–48 cm.; body diameters 36–40 cm.
   Base: Thickened, flattened, usually slightly concave with a prominent angular junction with the side walls. Depth of the concavity is 2–5 mm. with the base diameter 8–18 cm.
3. Open bowls, shallow or deep, with gently outcurving sides (fig. 38–3).
   Rims: Rounded lip, sometimes slightly thicker than the body wall; mouth diameters 14–25 cm.
   Body wall thickness: 7–10 mm.
   Body dimensions: Body diameters 12–27 cm.; depth 5–15 cm.
   Base: Slightly thickened, flattened and usually concave with prominent angular junction with the sidewalls. Thickness 1.5 cm.; diameter 4–12 cm.
4. Bowl with incurving sides and constricted opening (fig. 38–4; pl. 20, *a*, *d*).
   Rims: Incurving rim with squared lip with rounded edges, often slightly thickened on the exterior; mouth diameter 8–14 cm.
   Body wall thickness: 7–10 mm.
   Body dimensions: Maximum body diameter 12–24 cm.; depth 8–15 cm.
   Base: Slightly thickened, flattened and usually concave with prominent angular junction with the side walls. Thickness 1.5 cm.; diameters 5–12 cm.

Less common vessel shapes:

1. "Graters"—Open, carinated bowl with outcurving rim with parallel grooves on bowl interior (pl. 23, *d*).
   Rims: Outcurved, unthickened, with rounded lip; mouth diameters 38–40 cm.
   Body wall thickness: 12–14 mm.
   Base: No complete vessel found, probably flattened.
   Grater groovings: Parallel grooves, 2–4 mm. wide, 3 mm. deep and 4–7 mm. apart, cut into the interior of the bowls but not upon the short, vertical or slightly outslanting side wall. In cross section the grooves are V-shaped with a rounded base to the V. Since no base sherds were found with these incisions on Aristé Plain, it is assumed that the parallel grooves are limited to the lower part of the curved bowl interior.
2. Flat lid with a central nubbin handle. Crude and irregular, 16 cm. in diameter, 1.6–2.4 cm. thick; nubbin handle 3 cm. high, 1.5 cm. in diameter at the top and 5 cm. at the base.

TEMPORAL DIFFERENCE WITHIN THE TYPE: Cambered collared jar (form 1) increases in popularity through the sequence (See Appendix, table 12).

CHRONOLOGICAL POSITION OF THE TYPE: Most popular in the lower part of the Aristé Phase sequence in both the cemetery and habitation sites, fading out in the middle part in the cemetery sites with only a trace in the habitation sites of the upper (late) part of the sequence.

ARISTÉ PAINTED

Paste and unpainted surface: The painted pottery is on Aristé Plain; see that type for details of paste, temper, firing, and treatment of the unpainted surface.

Form:

Common vessel shapes:

1. Small to medium low-waisted or round-bodied jar with narrow, short neck and cambered collar (fig. 39–1; pl. 21, *a*).

   Rim: Cambered collar with a short rim wall, usually vertical, extending 1–3 cm. out from neck. Lip tapered, rounded or square with rounded edges. Mouth diameter 18–32 cm.; constricted neck diameter 10–26 cm.

   Body wall thickness: Range 7–12 mm.; majority 7–8 mm.

   Body dimensions: Neck and rim height 5–15 cm., maximum body diameter 26–38 cm., overall height 22–47 cm. with the majority 30–35 cm.

   Base: Thickened, 1–2 cm., flattened and usually slightly concave (depth of concavity 2–5 mm.), prominent angular junction with side walls. Base diameter 8–18 cm.

   Appendages: Rarely a small strap handle from collar to jar neck or applique ribs or nubbins on collar or upper part of jar body.

   Decoration: Commonly a red band on neck or collar or on both and extending to the upper shoulders of the jar body. Polychrome design on neck and upper part of body on a few sherds.
2. Low-waisted jar with a long, outcurving neck (fig. 39–2).

   Rim: Usually curves gracefully outward with a direct or slightly exteriorly thickened rim; lip rounded or square with rounded edges. Mouth diameter 26–38 cm.

   Body wall thickness: 7–11 mm.; majority 7–8 mm.

   Body dimensions: Neck diameter 20–32 cm., neck height 3–10 cm., overall height 25–48 cm., body dimensions 36–40 cm.

   Base: Same as form 1.

   Decoration: Same as form 1, plus the common occurrence of red on the inner lip, rim exterior, and upper part of the jar.
3. Shallow, open bowl with outcurving sides, sometimes slightly cambered, and usually an everted rim (fig. 39–3).

   Rim: Everted, unthickened with lip tapered, rounded or square with rounded edges. Mouth diameters 14–26 cm.

   Body wall thickness: 7–10 mm.

   Body dimensions: Depth 5–12 cm.

   Base: Slightly thickened, flattened and usually concave with prominent angular junction with the side walls. Thickness 10–15 mm. Diameter 4–12 cm.

   Decoration: Red paint on inner lip, exterior of rim, and in a band extending for a few centimeters down on the side wall.
4. Bowl with incurving sides and constricted mouth (fig. 39–4; pl. 21, *b*).

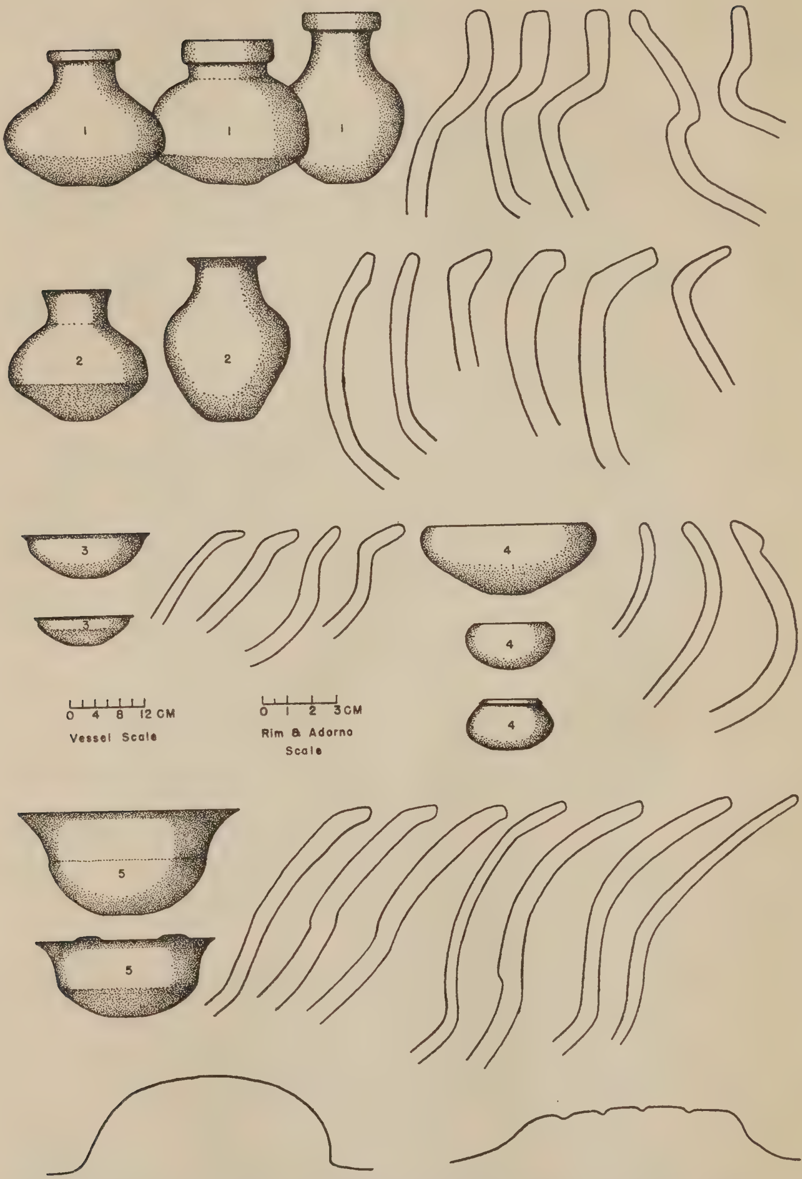
   Rim: Incurving, sometimes slightly thickened on the exterior, beveled and tapered to rounded lip. Mouth diameter 10–28 cm.

   Body wall thickness: 4–10 mm.

   Body dimensions: 14–32 cm.; depth 8–16 cm.

   Base: Same as form 3.

   Decoration: Red band around exterior of rim, especially on the upper suface of the beveled type.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Rim & Adorno Scale

FIGURE 39.—Rim profiles and vessel shapes of Aristé Painted, Aristé Phase (Appendix, table 13).

5. Large, open, carinated bowl with wide, flaring, flange rim (fig. 39–5).
   Rim: Strongly everted with a wide (6–10 cm.), outcurving flange, sometimes slightly thickened on the interior. Lip either rounded or squared with rounded edges. In about half the sherds the rim is lobed. These lobes or protrusions with rounded edges range from 1.5–4.0 cm. in width and 8–10 cm. in length. Mouth diameters 28–38 cm.
   Body wall thickness: 5–9 mm; majority 7 mm.
   Body dimensions: Body diameter at carination 20–32 cm.; height 12–16 cm.
   Base: Same as form 3.
   Decoration: Usually polychrome (red, yellow, black on white slip or tan surface) or bichrome (red on tan) complicated designs of meanders, frets, interlocking spirals, lines and dots on bowl interiors, especially on the wide flange (fig. 40, *a–b*). Sometimes the interior is white slipped with a painted design on the interior of the flange surface with pattern outlined by a black line. Rarely, this shape is painted only red on the unslipped surface.

Rare vessel shape:

1. Jar with anthropomorphic face modeled on the neck and cambered collar. Shape usually the same as common form 1, with the face modeled in low relief with applique eyes, nose, and ears. The entire face is painted red (fig. 35).

DECORATION:

Technique: Most commonly a dull-red ochre thickly applied, sometimes almost thick enough to be a slip. A few are bichrome or polychrome with red or red and black fine to medium lines upon a thick white slip. Painting is usually on the interiors of bowls, exterior of jar necks and bodies, bowl or jar lips or in a band around the cambered rim of jars.

Motif: Ninety percent of all sherds are a red painted monochrome in parallel, wide bands or a thick red band around the neck, exterior of the rim or from the rim to the base of the neck. In a few cases the band extends 1–2 cm. onto the shoulder of the jar. Ten percent of the painted forms are polychrome or bichrome in complicated designs of meanders, frets, interlocking spirals and lines with an occasional use of dots (fig. 40, *a*, *b*).

TEMPORAL DIFFERENCE WITHIN THE TYPE: Collared, cambered jars (form 1) increase as the jar with thickened rim and outcurved neck (form 2) decreases. The cambered bowl with the flangelike rim is limited to this type and is most popular in the early part of the Phase sequence (Appendix, table 13).

CHRONOLOGICAL POSITION OF THE TYPE: Aristé Painted seems to be principally a cemetery ware and is not found later than the middle of the Aristé Phase sequence, after which time it is replaced by Serra Painted.

DAVÍ INCISED

PASTE:

Method of manufacture: Coiling.

Temper: Quartz sand particles.

Texture: Gritty, sandy paste, friable and fairly weak with irregular cleavage planes.

Colar: Light orange to reddish orange; only a few have a gray core.

Firing: Oxidized, generally complete.

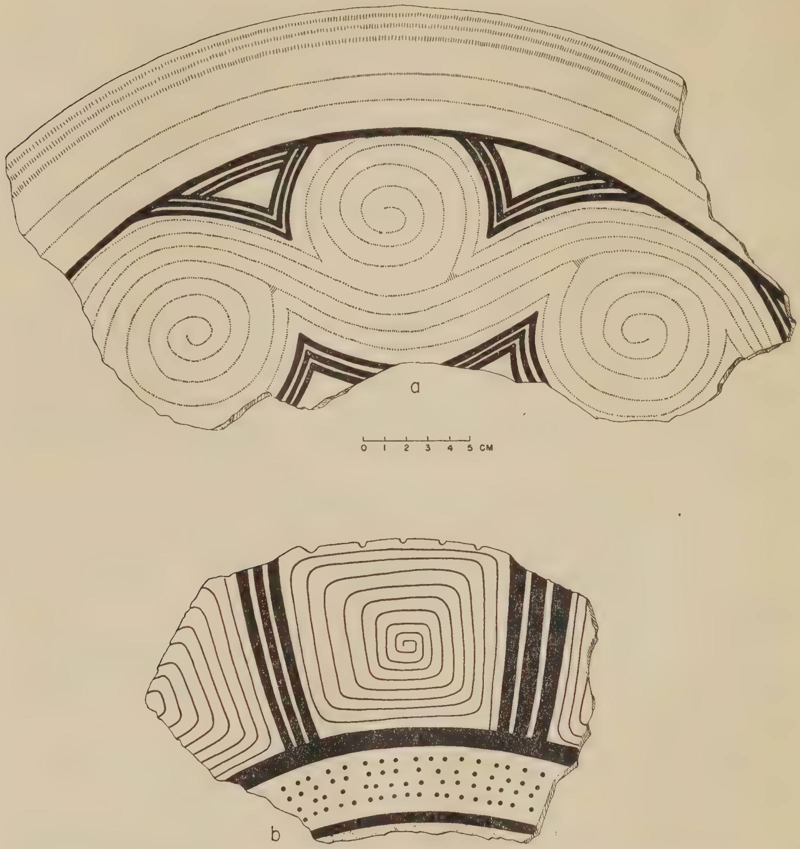

FIGURE 40.—Aristé Painted sherds from A-11—Montanha de Aristé, cave 2, Aristé Phase: *a*, Black (solid lines) and yellow (hachured lines) on a thick white slip. *b*, Black (wide lines) and red (narrow lines) on white slip.

SURFACES:

Color: Exterior and interior, light orange to a dull, tile orange.

Treatment: Smoothed, but gritty and rough due to sandy paste.

Hardness: 3.

FORM:

Common vessel shapes:

1. Low-waisted jar with a short neck and wide, cambered collar (fig. 41-1).

   Rim: Slightly incurved, cambered collar (4-5 cm. wide) with squared lip. Mouth diameter 16 cm.

   Body wall thickness: 5-11 mm.

   Body dimensions: Body diameter 30 cm.; height 24-26 cm.

   Base: Flat with slightly concave center.

   Decoration: Vertical and slightly diagonal incisions on the collar exterior; diagonal lines arranged in crude triangular zones on the upper body wall.

2. Round-bodied jar with flat base and short neck with thickened, everted rim (fig. 41–2).
   - *Rim:* Exteriorly thickened with a wide coil, slightly everted rim with rounded lip. Mouth diameter 30 cm.
   - *Body wall thickness:* 11–13 cm.
   - *Base:* Flattened, slightly thickened.
   - *Decoration:* Vertical and diagonal incised lines on rim exterior haphazardly spaced, ranging from 8–15 mm. apart.
3. Carinated bowl (fig. 41–3).
   - *Rim:* Carinated with outcurving flange ending in a thinly tapered, rounded lip. Mouth diameter 24 cm.
   - *Body wall thickness:* 9 mm.
   - *Body dimensions:* Sherds too fragmentary to reconstruct.
   - *Base:* Flat, slightly thickened.

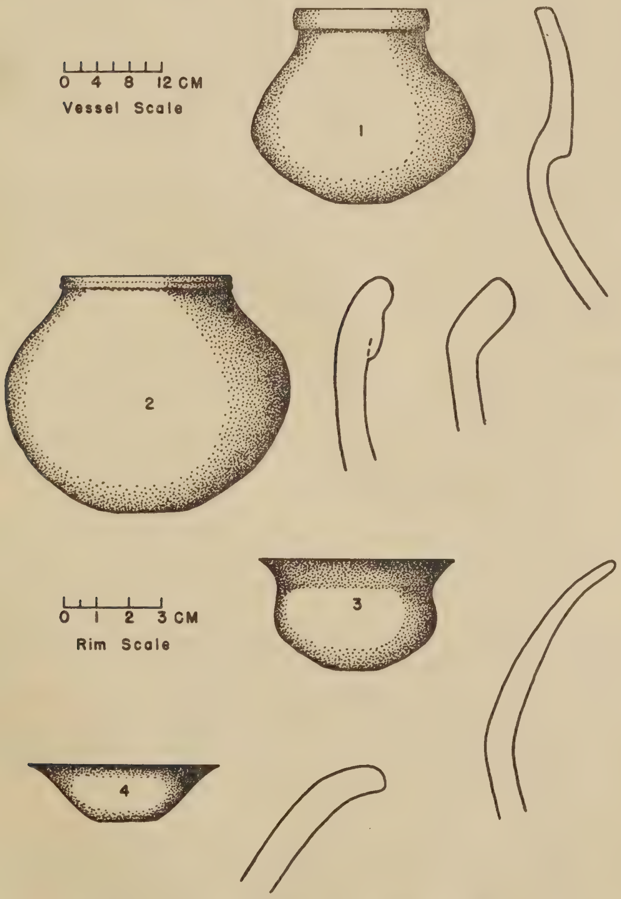

FIGURE 41.—Rim profiles and vessel shapes of Daví Incised, Aristé Phase (Appendix, table 14.)

Decoration: Diagonal lines crudely arranged in triangular zones on the exterior.

4. Open bowl with outslanting walls (fig. 41–4).

Rim: Slightly everted or direct; rounded lip. Mouth diameter 12–26 cm.

Body wall thickness: 11 mm.

Body dimensions: Sherds too fragmentary to reconstruct.

Base: Flat.

Decoration: Incised lines vertical or diagonal on the upper part of the side walls.

DECORATION (pl. 21, *c–f*):

Technique: Deep, sharp, uneven lines crudely and irregularly incised when the clay is extremely wet leaving very jagged and rough incisions 1–2 mm. wide and 2–4 mm. deep. Some lines are V-shaped in cross section.

Motif: A series of irregular, short lines arranged diagonally or vertically on the rim and upper surface of the body walls. Irregularity suggests hasty application. Roughly arranged in triangular blocks; a few sherds suggest curvilinear meanders but these are executed by means of connecting short lines.

TEMPORAL DIFFERENCE WITHIN THE TYPE: None evident from the limited sample (Appendix, table 14).

CHRONOLOGICAL POSITION OF THE TYPE: Limited to the middle to lower (early) part of the Aristé Phase sequence.

FLEXAL SCRAPED

PASTE AND SURFACES: On Aristé Plain, see that type description for details of temper, firing, color, and surface treatment.

FORM:

Common vessel shapes:

1. Low-waisted jar with short neck and wide, cambered collar (fig. 32, 42–1).

Rim: Wide (4.5–5.0 cm.), cambered collar, slightly incurved or straight, with a rounded or squared lip with rounded edges. Mouth diameter 16–26 cm.

Body wall thickness: 6–8 mm.

Body dimensions: Body diameters 28–32 cm; height 22–26 cm.

Base: Thickened in center to 1.2–1.5 cm., flat, 12 cm. in diameter

Appendages: Sometimes two strap handles on opposite sides connecting the collar with upper shoulder of body; oval cross section 1 cm. in diameter. Small nubbin appliques (1 cm. in diameter and height) sometimes on the shoulder.

Decoration: Scraped decoration of triangles and spirals from neck to the jar waist and on the wide, cambered rim.

2. Round-bodied jar with long, everted, direct rim (fig. 42–2; pl. 22, *c*).

Rim: Strongly everted, long (3.0–4.5 cm.) direct rim with rounded lip. Mouth diameter, 24–34 cm.

Body wall thickness: 6 mm.

Body dimensions: Body diameter 26–36 cm.; height 16–18 cm.

Base: Same as form 1.

Appendages: Small nubbin and fillet appliques, 5–10 mm. high, 8–10 mm. wide, and 1–6 cm. long.

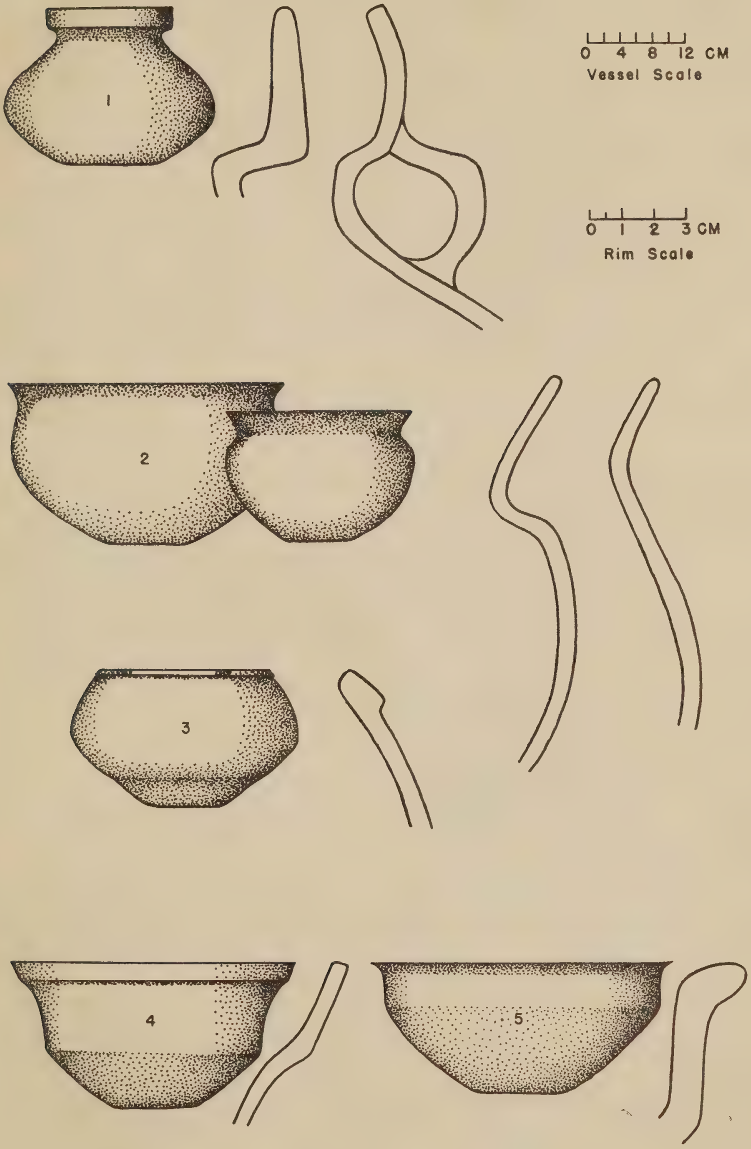
0 4 8 12 CM
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FIGURE 42.—Rim profiles and vessel shapes of Flexal Scraped, Aristé Phase (Appendix, table 15).

Decoration: A complex mixture of wavy lines and meanders separated by almost parallel straight lines and enclosed in a rectangular zone formed by scraped lines.

3. Deep bowl with constricted orifice and pronounced angular waist (fig. 42–3).

   Rim: Exteriorly thickened, squared lip, uneven and wavy.

   Body wall thickness: Uneven, 5–7 mm.

   Body dimensions: Maximum body diameter 28 cm.; height 17 cm.

   Base: Flattened, juncture with side walls rounded, interior thickened, diameter 8 cm.

   Appendages: Three pairs of small, round, "button" appliques (1.2–1.5 cm. in diameter) on the exterior rim band; pairs equally spaced around the rim.

   Decoration: Squared meander on the rim between the paired "buttons"; vertical and slanting lines haphazardly arranged and overlapping to cover the area from the waist to the rim.

4. Carinated bowl with outcurved side walls and direct rim (fig. 42–4; pl. 22, *a*).

   Rim: Direct, slightly everted, joining the outcurved body walls with a prominent angle; lip squared. Mouth diameter 38 cm.

   Body wall thickness: 5–6 mm.

   Body dimensions: Diameter at carination 34 cm.; height 16–18 cm.

   Base: Flattened.

   Decoration: Body wall covered with lines diagonally crossed to form diamond and triangular-shaped areas which are filled with squared spirals or parallel lines. Exterior of rim covered with a series of intertwined meanders.

5. Large, open, slightly carinated bowl with vertical side walls and thickened, everted rim (fig. 42–5; pl. 22, *e*).

   Rim: Externally thickened, strongly everted with a rounded lip, mouth diameter 40 cm.

   Body wall thickness: 10 mm.

   Body dimensions: Maximum body diameter 37 cm.

   Base: No fragments found; probably flattened.

   Decoration: Diagonally scraped lines on the 4 cm. wide vertical wall. Lower edge of lines bordered by an incised line.

DECORATION (pl. 22):

Technique: Surfaces scraped with a blunt, flat tool. Scraped lines range from 3–5 mm. in width and up to 1 mm. in depth. Most of the scrapings are flat troughed, but in some cases the tool was held at an angle cutting the line deeper at one side than the other. Designs are made with separate, individual stokes, not with a comb.

Motif: A few of the designs are carefully executed with each line distinct from the other in a series of roughly parallel scrapings on the vessel exterior. Most, however, are haphazardly done with the lines overlapping each other in a series of diagonal, horizontal, and vertical lines without any particular design motif except to cover the entire surface with scrapings. Motifs range from a double spiral or "S" separated from the next unit by a series of parallel, vertical or slightly diagonal lines to a series of triangles arranged vertically around the shoulder of carinated bowls with the spaces filled with individual scrapings. A few cambered, collared jars have a series of rectilinear meanders or vertical scrapings with "S" spirals on the waists of the jars.

Temporal difference within the type: Sample too limited to note any changes. (Appendix, table 15).

Chronological position of the type: Restricted to the lower (early) part of the Aristé Phase sequence.

SERRA PLAIN

Paste:

Method of manufacture: Coiling.

Temper: Medium-coarse, ground sherd intermixed in the paste in moderate amounts; a few sherds have some rounded, quartz particles suggesting accidental mixture.

Texture: Coarse, granular, poor mixture of clay and temper makes a very irregular fracture plane. Sherds are easy to break but not soft or friable and all have a dull thud.

Color: The majority have a fine, thin gray core banded on either side with a light tan to orange; few have a full core of light orange to tan color.

Firing: Oxidized, generally incomplete; very few fire clouds.

Surfaces:

Color: Interior and exterior of majority are a light, orange tan to a light, grayish brown; a few have a grayish tan to orange-tan exterior and a grayish black to gray-brown interior.

Treatment: Most well smoothed on exterior and interior with a very even surface and only a few smoothing tracks visible. Fine pores from water bubbles are quite prominent on the surfaces, suggesting smoothing when the clay was extremely wet. About one-quarter of the sherds have a well-smoothed exterior with a less regular and uneven interior. A few sherds have both surfaces smoothed to a high polish.

Hardness: 2.5–3.

Forms:

Common vessel shapes:

1. Round, high- to low-waisted jar with short to medium neck, externally thickened, everted rim (fig. 43–1; pl. 23, *b*, *c*, *e*, *f*).

   Rim: Ranges from a very pronounced to a moderately everted rim, thickened with a coil added to the exterior surface. The short to medium length neck ranges from an insloping neck with a pronounced, everted rim to an almost vertical neck with a slightly everted rim. Lip is most commonly rounded but sometimes squared with rounded corners. Mouth diameters 18–38 cm.

   Body wall thickness: 8–14 mm., most 10–11 mm.

   Body dimensions: Body diameters 28–50 cm., most 36–40 cm.; reconstructed height 36–50 cm.

   Base: Flattened, slightly thickened (1.2–2.0 cm.) sometimes with a slight pedestal 5–8 mm. high. Diameter 10–18 cm., majority 16 cm.

   Appendages: Rarely nubbins or small riblike appliques are on the upper part of the jar body.

2. Large, low-waisted jar with long vertical or slightly incurving neck and an unthickened rim (fig. 43–2; pl. 23, *a*).

   Rim: Gently incurved to a vertical, direct rim with a rounded lip. Mouth diameters 36–52 cm.; majority 44–50 cm.

   Body wall thickness: 7–9 mm.

   Body dimensions: Diameters 36–60 cm.; reconstructed height 30–50 cm.

   Base: Same as form 1.

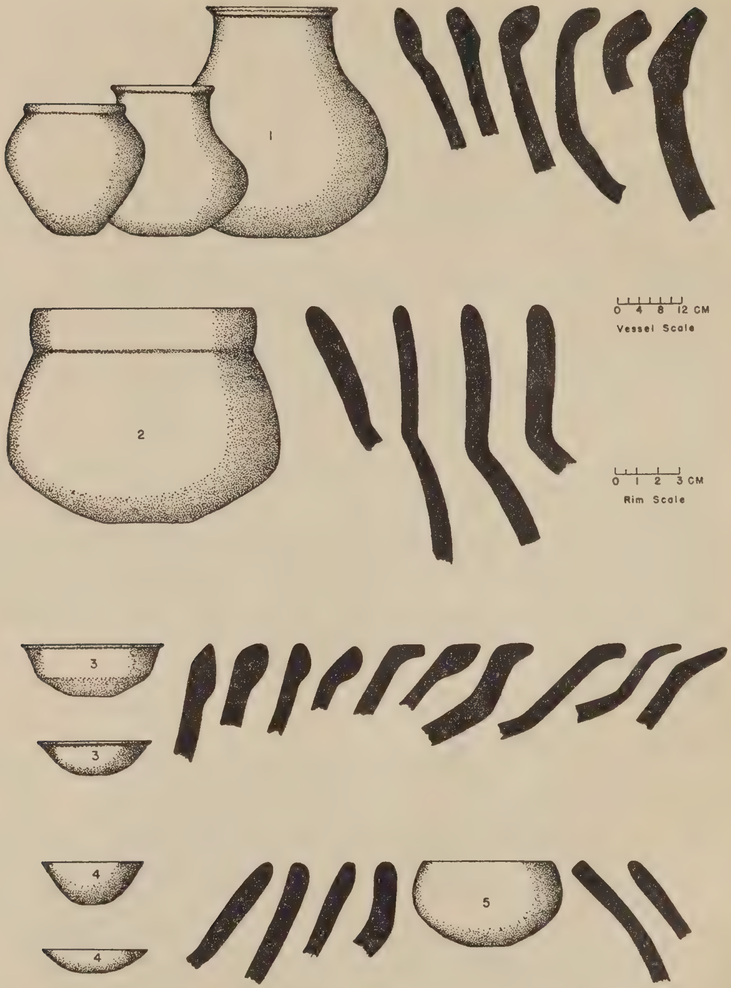

Figure 43.—Rim profiles and vessel shapes of Serra Plain, Aristé Phase (Appendix, table 16).

3. Slightly carinated open bowl with everted lip (fig. 43–3).
   Rims: Everted, usually exteriorly thickened but sometimes direct with a rounded, tapered or squared lip with rounded edges. Mouth diameter 18–32 cm.; most 22–26 cm.
   Body wall thickness: 7–10 mm.; most 7–8 mm.
   Body dimensions: Diameters 14–28 cm.; depth 6–16 cm.
   Base: Same as form 1.
   Appendages: Occasionally an adorno or lobe on the lip of the Serra Plain sherds from the Ilhas do Campo Site.

4. Small to medium open bowl with outcurving sides (fig. 43–4).
   Rim: Outcurving and upcurving with rounded lip; mouth diameters 16–28 cm.
   Body wall thickness: 5–10 mm.
   Body dimensions: Depth 10–18 cm.
   Base: Same as form 1, but rarely a rounded base occurs.
5. Bowl with incurved sides and constricted mouth (fig. 43–5).
   Rim: Incurved with lip which is usually rounded but sometimes squared with rounded edges. Mouth diameters 24–28 cm.
   Body wall thickness: 8 mm.
   Body dimensions: Diameters 26–30 cm.; depth 12–18 cm.
   Base: Flattened, 8–13 cm. in diameter.

Less common vessel shapes:

1. "Graters"—Open, carinated bowl with outcurving rim with parallel grooves on the interior.
   Rim: Outcurved, unthickened, carinated, with a rounded lip. Mouth diameter, 38–40 cm.
   Body wall thickness: 12–14 mm.
   Base: No complete vessel found but fragments suggest probably flattened.
   Groovings on the bowl interior: Parallel grooves 2–4 mm. wide, 3 mm. deep and 4–7 mm. apart, incised on the upper interior of the bowls but not upon the short, vertical or slightly outcurving sidewall (pl. 23, *d*). "V" with a rounded base in cross section. Since no base sherds of Serra Plain were found with groovings on them, it can probably be assumed that the groovings are limited to the lower bowl interiors and do not extend to the base.

TEMPORAL DIFFERENCE WITHIN THE TYPE: Jars with short to medium neck, thickened, everted rim (form 1) decline in popularity while bowl forms 3 and 4 increase. Bowls with constricted mouths (form 5) are limited to the middle to early part of the sequence (Appendix, table 16).

CHRONOLOGICAL POSITION OF THE TYPE: Increases in popularity throughout the Aristé Phase sequence.

SERRA PAINTED

PASTE:

Same as Serra Plain; see that type description for details.

SURFACES:

Unpainted surfaces: Same as Serra Plain.

Slipped surfaces: In about ¼ of the painted sherds, the painting is applied on a thickly white-slipped surface. This occurs on the exterior of jars and bowls and on the interior of a few carinated bowls.

FORM:

Common vessel shapes:

1. Round or low to high-waisted jar with a short to medium length neck, externally thickened lip and constricted mouth (fig. 44–1; pl. 24, *a–b*)
   Rim: Exteriorly thickened with a coil, usually everted, short to medium neck either slightly insloping or vertical; lip rounded or squared with round edges. Mouth diameter 22–24 cm.
   Body wall thickness: 8–10 mm.
   Body dimensions: Maximum body diameter 28–50 cm.; estimated height 30–50 cm.

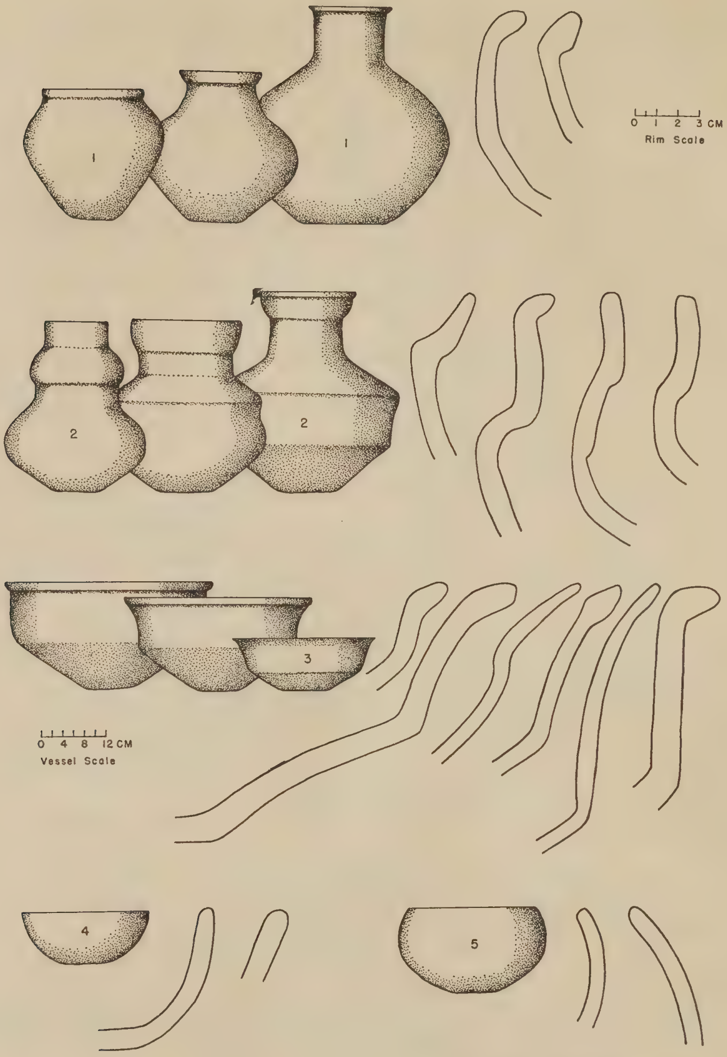

FIGURE 44.—Rim profiles and vessel shapes of Serra Painted, Aristé Phase (Appendix, table 17).

Base: Flattened, slightly thickened; diameter 10–18 cm.; sometimes a slight pedestal (5–8 mm. high). Some jars have holes, usually 5, punched in the base while the clay was wet, tapering from 7–8 mm. in diameter on the interior to 3–4 mm. on the exterior.

Decoration: Red slip or paint on the lip and exterior of the thickened rim, and/or a band on the neck, but rarely extending onto the body walls.

2. Tall jar with vertical to outcurving cambered rim and carinated or double-carinated body (fig. 44–2; pl. 24, *c–d;* pl. 25, *b*).
    Rim: Outcurved, cambered collar developed out of a short to long neck. Either direct or externally thickened with a coil. Lip rounded or squared with rounded edges. Mouth diameters 20–36 cm.; majority 28–32 cm. Occasionally, especially on the Cunaní materials, an anthropomorphic face is modeled on the rim and neck with low appliques to form the eyes, ears, nose, mouth and eyebrows (see pl. 24, *c*, and Goeldi, 1900).
    Body wall thickness: 8–13 mm.; majority 11 mm.
    Body dimensions: Diameter 28–40 cm.; total height 30–50 cm.; neck height 10–20 cm.
    Base: Flattened, thickened on interior, diameter 10–16 cm.
    Appendages: Applique modeling of anthropomorphic faces on neck and rim, and arms, breast and navel on the jar body; sometimes an adorno of an anthropomorphic face or an animal is applied to the shoulder of the body.
    Decoration: Predominantly a red paint on white slip, or less commonly on the natural, tan surface, in combinations of interlocking curvilinear spirals, meanders, frets and steps. The curvilinear interlocking spirals are the most common motif. Rarely the polychrome technique is found on this form.
3. Carinated bowl (fig. 44–3; pl. 24, *e*).
    Rim: Carination ranges from a vertical to a strongly outcurving side wall with an exteriorly thickened, everted, direct or tapered rim and a lip which is rounded or squared with rounded edges. Mouth diameters 22–44 cm.; majority 32–36 cm.
    Body wall thickness: 6–13 mm.; majority 8–10 mm.
    Body dimensions: Body diameters 26–34 cm.; height 10–24 cm.
    Base: Flattened, internally thickened; diameters 8–14 cm. Some have holes in the base; see form 1, "base" for details.
    Decoration: Most commonly, red curvilinear interlocking spirals on natural tan-orange surfaces or on white-slipped surface on the exterior of the vertical or outcurving side wall. Sometimes simpler curved lines or more complicated frets, meanders, and simple spirals are on same area. Rarely the designs are in true polychrome of red and black, sometimes yellow, on a white slip or natural surface.
4. Open bowl with outcurving to nearly vertical side walls (fig. 44–4).
    Rim: Direct, outcurving to nearly vertical rim with rounded lip. Mouth diameter 20–26 cm.
    Body wall thickness: 7–12 mm.; majority 8 mm.
    Body dimensions: Height 10–14 cm.
    Base: Flattened, slightly thickened, 8–12 cm. in diameter.
    Decoration: A combination of curvilinear spirals, frets, interlocking meanders, etc. on the interior surface. Most commonly in polychrome of red, black and yellow on white slipped surface but sometimes only red on a white slip or red on the natural colored surface.
5. Bowl with incurved sides and constricted mouth (fig. 44–5).
    Rim: Direct, incurved, with the lip either rounded or square with rounded edges. Mouth diameter 24–28 cm.
    Body wall thickness: 8 mm.

Body dimensions: Diameters 26–30 cm.; height 12–18 cm.

Base: Flattened, 8–12 cm. in diameter.

Decoration: Band on exterior 6–10 cm. wide with the typical combination of curvilinear spirals, frets, etc. usually in red on white slip or red on the natural buff-tan surface. Occasionally the designs are in polychrome.

DECORATION (pl. 24, 25):

Technique:

1. Monochrome: Red paint or a thick red slip in bands around the collar, rim or upper part of the body; polishing striations visible on the red-slipped surface. Red paint in fine (1–2 mm.) to broad (10–20 mm.) lines on the natural tan to buff surfaces.
2. Bichrome: Red designs of fine to broad lines on white-slipped surfaces.
3. Polychrome: Red, black and/or yellow designs on natural buff surfaces or on a white slip.

Regardless of the color technique only about one-half of the designs are well executed, with the others appearing as if they were done in great haste with the lines and units very irregular and uneven.

Motif: Simple bands or complicated designs of a mixture of curvilinear and rectilinear interlocking units, spirals, lines, rectangles, meanders, undulating lines and waves (fig. 33). Sometimes these are combined with anthropomorphic motifs, i. e. faces, arms, breasts, and navel shown by applique with the painted design curving around and accentuating these features (pl. 24, *c*).

TEMPORAL DIFFERENCES WITHIN THE TYPE: Tall jars with vertical to outcurving rims, cambered and carinated or double carinated, low-waisted bodies (form 2) appear only in the late part of the sequence (Appendix, table 17).

CHRONOLOGICAL POSITION OF THE TYPE: Increase in popularity throughout the Aristé Phase sequence; especially common in the cemeteries.

UAÇÁ INCISED

PASTE AND SURFACES: On Aristé Plain, see that type description for details of paste, color, temper and surfaces.

FORM:

Common vessel shapes:

1. Bowl with incurved rim, slightly constricted mouth (fig. 45–1).

   Rim: Incurved, either slightly thickened on interior or tapered, lip rounded. Mouth diameters, 26–40 cm.; majority 36 cm.

   Body wall thickness: 7–10 mm.; majority 8 mm.

   Body dimensions: Maximum diameters 28–46 cm; reconstructed height 12–20 cm.

   Base: Flattened, slightly thickened on the interior and slightly concave on the exterior; diameters 8–14 cm.

   Decoration: Usually a deep (1–2 mm.) groove around the rim and 1–3 cm. below the lip. This marks the upper margin of a band of decoration limited to the upper shoulder of the bowl which consists of diamonds, triangles, squares and parallel lines. These motifs are usually in lighter, finer lines than the grooved incisions which form the border.

2. Large, slightly carinated, open, basinlike bowl (fig. 45–2).

   Rim: Slightly carinated, vertical to slightly outslanted side walls, exteriorly thickened rim with a rounded lip; mouth diameters 36–38 cm.

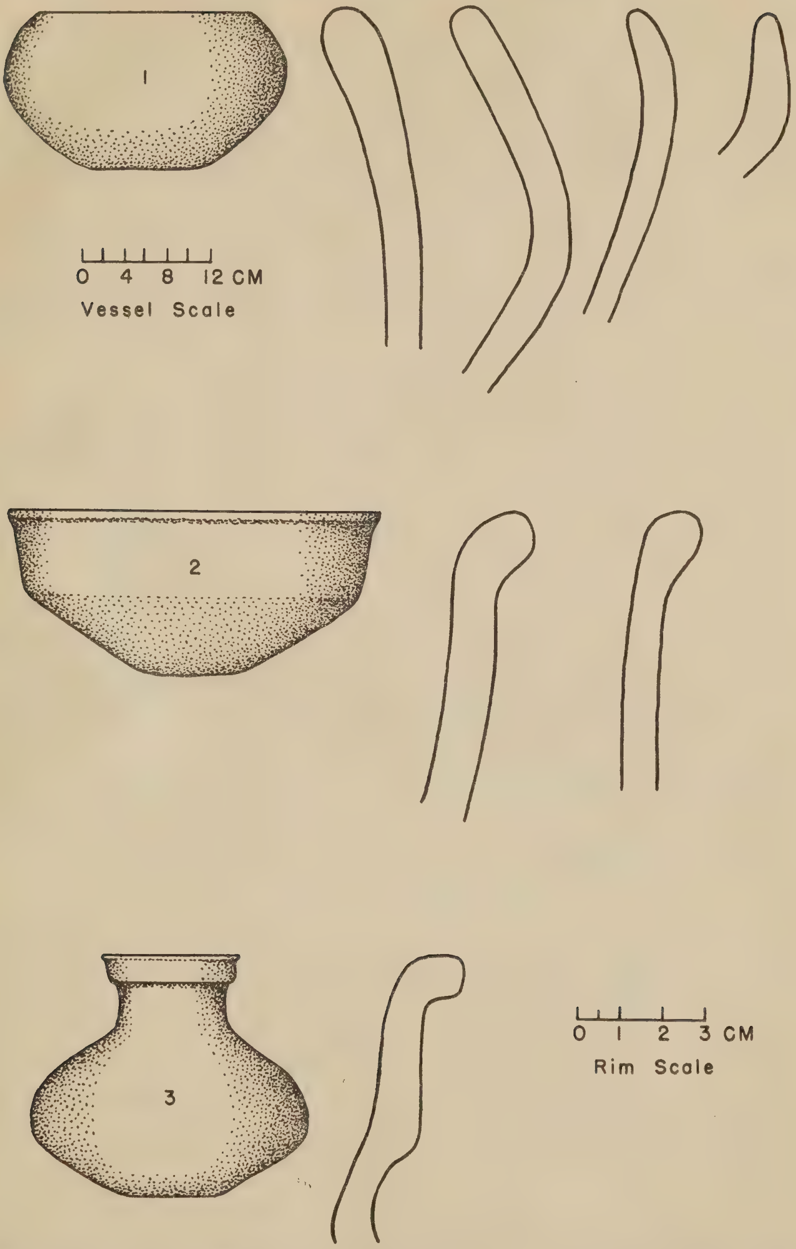
1
0 4 8 12 CM
Vessel Scale
2
3
0 1 2 3 CM
Rim Scale

FIGURE 45.—Rim profiles and vessel shapes of Uaçá Incised, Aristé Phase (Appendix, table 18).

Body wall thickness: 10–13 mm.

Body dimensions: Diameter 34–36 cm., vertical side wall height 6–8 cm., total height 12–14 cm.

Base: Flat, same as form 1.

Decoration: Band of incisions (3–6 cm. wide band) around the exterior of vertical to slightly outslanted side walls, just below the rim. Band bordered by deep (1–2 mm.) and wide grooved incisions. Motif in the form of triangles and diamonds or curvilinear spiral and waves in this band.

3. Short-necked jar with cambered collar and everted rim (fig. 45–3; pl. 26, *f-g*).

Rim: Vertical, cambered collar, slightly thickened, 4 cm. wide; unthickened, everted rim with a squared lip with rounded edges. Mouth diameter 24 cm.

Body dimensions: Neck and collar height 7 cm.; globular body reconstructed to about 32 cm. in diameter.

Base: No fragments found; probably flattened.

Decoration: Series of almost parallel horizontal lines on cambered collar and neck, 1 mm. wide and 1 mm. deep averaging 8 mm. apart, bordering a curvilinear pattern.

DECORATION (pl. 26, *d-g*):

Technique: The incisions, varying from 0.5–1.5 mm. in depth, are all U-shaped and made with a blunt tool, ranging from 1–3 mm. in width. All are carefully executed with the incised lines and grooves very regular.

Motif: Most typically a series of short, parallel lines, intertwining wavy lines, short serpentine undulations, adjoining diamonds and triangles. There is only one example of curvilinear spirals. The designs are limited to the shoulders of bowls and neck, collar and shoulders of jars. Occasionally incisions occur on the exterior face of lips. Most of the light incisions are bordered by a deeper, broader incised groove.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None observable due to the small sample (Appendix, table 18).

CHRONOLOGICAL POSITION OF THE TYPE: Limited to the early (lower) part of the Aristé Phase sequence.

UNCLASSIFIED DECORATED

BRUSHED SHERDS: On a few body sherds, the exterior surface is lightly brushed in vertical to diagonal lines. Some overlap of the lines suggests application with a bunch of pointed sticks, which is further attested by the irregularity of the spacing between the lines.

POTTERY ARTIFACTS

The only pottery artifacts from the Aristé Phase are small figurines (fig. 30; pl. 26, *a–c*).

NONCERAMIC ARTIFACTS

The number of nonpottery artifacts from the Aristé Phase is so limited that characteristic types cannot be defined. A tabulation of the total materials from all the sites of this Phase gives: 2 well-polished celts; 1 small, notched, well-polished ax; 1 small stone chisel; 6 roughly dressed hammerstone fragments, a few of which may have been originally the poll or butt end of hand axes; 1 grinding stone fragment also used as a hammerstone; 7 nephrite objects, of which 5 are cylindrical beads and 2 stylized pendants; 27 burnt clay lumps; 25 natural rock fragments, of which only 5 are fire burnt; and 10 drilled shell pendants. In the Aristé Phase the role of stone artifacts was obviously secondary to that of pottery and probably also to perishable objects made of wood and plant fibers, which have all disappeared because of climatic conditions.

Glass trade beads were described in detail with the site discussions, hence no repetition is required here. These were found at Sites A–10 and A–15 (pl. 25).

CERAMIC HISTORY

In spite of the wide region, extending from the Rio Oiapoque southward to the Rio Araguarí-Amaparí, over which the principal ceramic types of the Aristé Phase are found, the pottery exhibits only minor local differences. This consistency suggests a stable and well-integrated culture, undisturbed after the initial period of adjustment. The shallowness of the habitation sites, never more than 10 cm. deep, made a stratigraphic approach impossible and required that other factors be made the basis for seriation. The presence of European glass trade beads in several of the cemeteries provides a rough terminal point. The absence of several decorative styles (e. g. Flexal Scraped, Daví Incised, and Uaçá Incised) at the sites with the trade material suggests that sites producing these pottery types are earlier than the others and belong at the beginning of the time sequence for the Phase. A further clue comes from the percentage analysis of the ceramic types from Site A–10—Montanha da Pluma. Since the vessels stacked around the two entrances to the cave may be taken to represent the overflow after the interior was filled, the percentage difference between the inside and outside should be representative of the trend in pottery change. This interpretation is affirmed by the fact that glass trade beads were found with vessels at the entrance to the cave and none came from inside. As in the Mazagão Phase the cemetery wares show selection for the decorated types, making it impossible to interdigitate them in the sequence of occupation sites. The latter were seriated separately on the basis of trends revealed in the cemeteries, from which they mainly differ only in the relative amount of decorated ware (fig. 46).

The major trend in the plainware is similar to that in the Mazagão Phase. Gritty, quartz and sand tempered Aristé Plain begins as the dominant ware and gives way steadily, with a few minor fluctuations, to the increasingly popular, smooth, sherd-tempered Serra Plain. Aristé Plain decreases from 74.4 percent to 20.8 percent in the cemeteries and from 98.7 percent to 0.3 percent in the habitation sites, with the concomitant increase of Serra Plain from 9.6 percent to 72.5 percent in the cemeteries and from 0 percent to 93.8 percent in the habitation sites (Appendix, table 11). The relative position of the sites in the Aristé Phase sequence is shown on the accompanying chart (fig. 46).

As was the case in the Mazagão Phase, the Aristé Phase can be divided into an early and late period on the basis of changes in the decorated ware. Sherds decorated in the incised or scraped tradition (Flexal Scraped, Uaçá Incised, Daví Incised) are diagnostic of the earlier sites in the sequence. They are associated with painted styles in the cemeteries, but, except for the 1 percent occurrence of Serra Painted at Site A–16, these plastic traditions are the exclusive decorative style at the four earliest habitation sites.

Flexal Scraped, the most popular of the three nonpainted decorated pottery types, may be likened to Jarí Scraped of the Mazagão Phase. The technique of execution with a flat, blunt tool is identical in both Phases but the motif is slightly more elaborated in the Aristé Phase material. Whereas Jarí Scraped of the Mazagão Phase was usually a series of parallel lines or rectilinear units, sometimes with a limited number of curvilinear lines, Flexal Scraped of the Aristé Phase has at least 25 percent of the examples executed in a carefully laid out design of double spirals and S motifs in units separated by parallel or vertical lines, triangles, and rectilinear meanders (fig. 32; pl. 22). The rest of the examples of the type, however, consist of separate, individual strokes or scrapings applied rather haphazardly over the whole vessel or sherd surface.

Distinctive Uaçá Incised (pl. 26, *d—g*) seems to be limited to the extreme northern part of the region occupied by the Aristé Phase. The combination of decorative elements common to this type—short, parallel lines, intertwining wavy lines, short serpentine undulations, adjoining diamonds and triangles, and an occasional spiral—have no counterpart outside the Aristé Phase. Although Uaçá Incised has a short history, limited to the early part of the sequence, the decorative motifs appear to have been transferred in part to the painted pottery, with many of the combinations of decorative elements showing up in the elaborate designs of Serra Painted.

Daví Incised, the crudest of the three decorated pottery types utilizing plastic traditions, was rarely used as a burial ware, but shows great persistence in the habitation sites. It is found in small percentages at all but the latest occupation sites, A–20, A–7, and A–22 (where the unusually small sherd sample might account for the absence). The simple decorative motifs of crudely applied, irregular lines arranged diagonally or vertically on the rim, neck or upper body wall

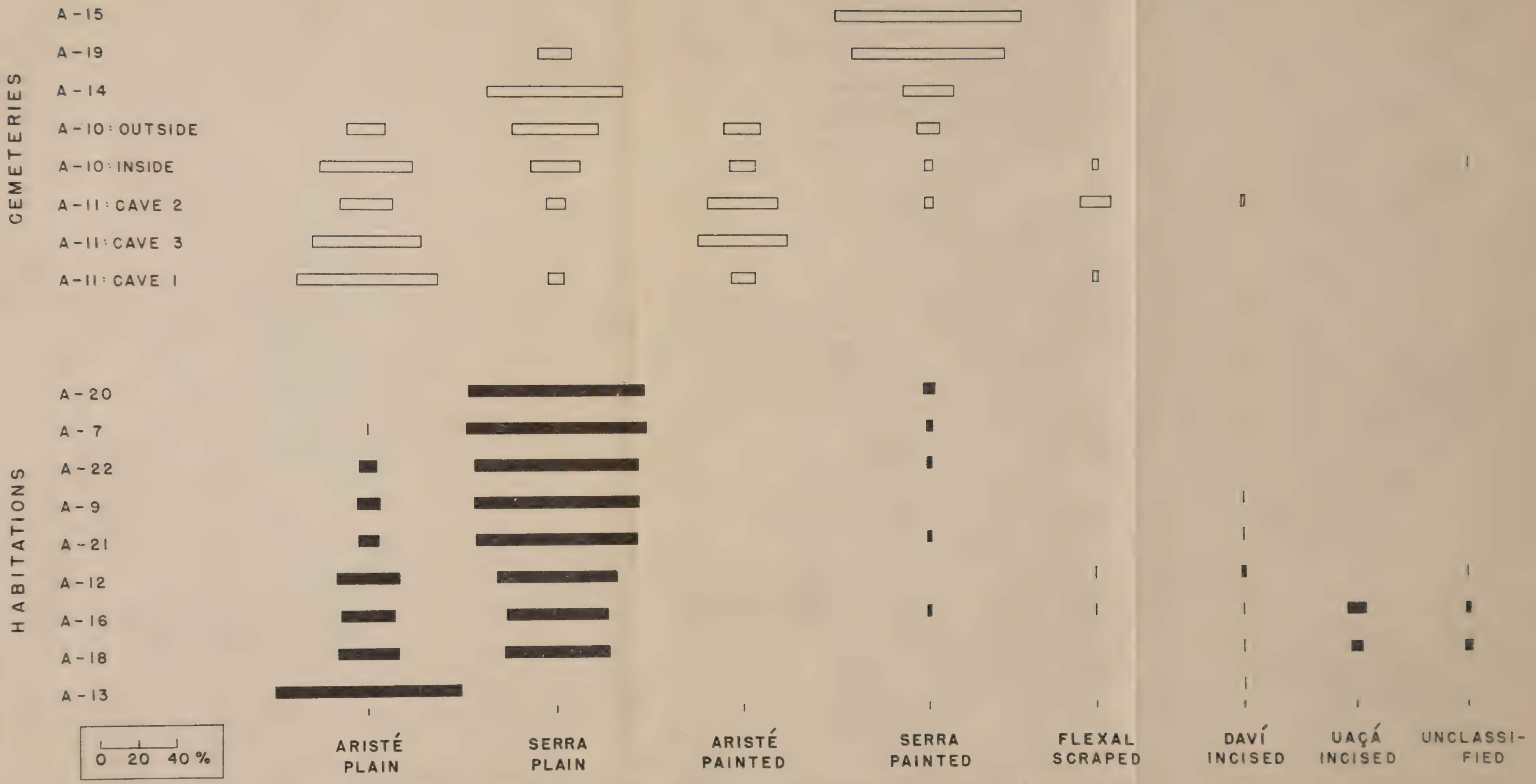

FIGURE 46.—Seriation of Aristé Phase sites on the basis of pottery type frequency (Appendix, table 11).

surfaces (pl. 21, *c–f*) do not appear to be directly related to any of the other decorated pottery types of the Aristé Phase. The trace occurrence of the type throughout the entire Phase offers little in the way of diagnostic features that might be useful as time-markers.

The late part of the Aristé Phase is characterized by the flowering of painting as the mode of decoration. This is most clearly demonstrated in the habitation sites, where the percentage of Serra Painted increases from 1 to 6 percent as the incised and scraped techniques die out. In the cemeteries belonging to the late part of the Phase, decoration in the plastic medium is absent and Aristé Painted, which had dominated the early period, is succeeded by Serra Painted as the major decorated ware. Since no conscious preference seems to have been shown in the plain ware types chosen for decoration, the increase in frequency of Serra Painted from 0 percent at Cave 1 and Cave 3 of Site A-11 to 82.6 percent in Goeldi's Cunaní material (the 100 percent occurrence shown at Site A–15 on the chart, fig. 46, is based on a single vessel) is apparently a reflection of the growing predominance of sherd-tempered pottery in its undecorated form. Aristé Painted shows a less clearcut, but still definite decrease in the cemetery sites from a high of 42.8 percent at the bottom of the sequence to a low of 20.8 percent at the top of the sequence. Of the painted types only Serra Painted occurs at the habitation sites. Ornamentation is executed in red or black paint alone, or in combination, either directly upon the natural surface or upon a white slip. It is applied in bands on the neck or body of the vessel or in complex patterns including spirals, dots, waves, meanders, curvilinear meanders, squares, and paired and tripled parallel lines in curvilinear and rectilinear motifs (fig. 40, *a*, *b*; pls. 24, 25).

The study of these motifs according to the seriated position of the sites on the time-sequence chart reveals a shift from simple, painted bands to highly complex and intricate designs. Of the 28 Aristé Painted vessels represented at Site A-11, Caves 1, 2, and 3 (the earliest site in the sequence), only 3 have a complicated design; the other 25 have a plain, single-colored (usually red) band around the neck or rim. Of the 3 Serra Painted vessels from the same site, 1 has a complicated design and 2 have plain red bands. At site A–10, of the 14 Aristé Painted vessels, 13 have plain red bands and only 1 the complicated design; of the 6 Serra Painted vessels 3 are of the plain-red-band type and 3 of a complicated motif. At Site A–11 all but one of the complexly painted vessels were found outside the cave and are of more recent deposition than the material inside the cave. This transition from simple band motifs to complicated designs reaches a culmination in Site A–19, which in decorated pottery types includes only elaborately executed Serra Painted.

In addition to the seriation study of the popularity change of various pottery types throughout time, a detailed analysis was made of the rim and vessel shapes. Several distinctive shapes occur in the two plain wares of this Phase. The collared, cambered, round-bodied, or low-waisted jar, form 1 of the Aristé Plain (fig. 38–1) does not occur in Serra Plain; while Serra Plain, form 2, a large jar with direct rim and long neck (fig. 43–2) does not appear in Aristé Plain. Although minor popularity trends occur in the various shapes for each plain ware, the time span is too short and the rim sample too small to produce any significant trends from a quantitative analysis; for this reason the data was left in tabular form (Appendix, tables 12 and 16) and not converted into a graphic presentation.

A study of the rim and vessel shapes of the painted pottery types offers similar data—within the type the shapes are helpful in a designation of its ceramic features, but the rim sample is not large enough to extract meaningful percentage trends in the various shapes although some slight trends are suggested (Appendix, tables 13 and 17). Again it is significant to note that Aristé Painted, form 1 (fig. 39–1), which comprises from 16.7 to 37.5 percent of the vessels of this pottery type, does not occur in Serra Painted. Likewise, Serra Painted, form 2 (fig. 44–2), one of the most popular shapes of this type, does not appear in Aristé Painted. In other words, except for the more standard common vessel shapes, such as open bowls, bowls with constricted mouths, and round-bodied jars with short neck and thickened rims, the major shapes of one painted or plain pottery type do not occur on another painted or plain pottery type. If the related plain and painted pottery types are analyzed together, other distinctions emerge. Specifically, since Aristé Painted appears to be a decorated type placed on Aristé Plain paste, and Serra Painted one on Serra Plain paste, it might be expected that the same vessel shapes would be present. However, a comparison of Aristé Plain forms with Aristé Painted forms reveals that two shapes occurring in Aristé Painted never occur in Aristé Plain. This suggests that decoration of certain pottery forms with painting did not involve merely the decision to paint some of the standard Aristé Plain shapes, but rather, two distinct vessel forms—Aristé Painted, form 3, slightly carinated bowl with everted lip, and Aristé Painted, form 5, carinated bowl with flangelike rim—were consciously manufactured for painted pottery only. Since Aristé Painted pottery is almost exclusively limited to the cemeteries and these two shapes are not found in the related plain ware, there is no question that there was a conscious manufacture and exclusive use of certain vessel shapes for burial purposes in the early part of the Aristé Phase.

The rim and vessel shape study of Serra Plain and Serra Painted offers similar correlations to those just described for Aristé Plain and Aristé Painted. Serra Painted is applied to Serra Plain paste with both types sharing certain common vessel forms and shapes. However, the most common vessel shape (74 percent at one cemetery site) of Serra Painted (form 2, tall jars with vertical to outcurving cambered rims and carinated or double-carinated low-waisted bodies) is exclusive to Serra Painted and is not found in any other pottery types of the Aristé Phase. Although a few fragments of Serra Painted vessels are found in the habitation sites, the pottery type was apparently manufactured primarily for burial purposes.

For the three pottery types utilizing plastic techniques of decoration, Daví Incised, Flexal Scraped, and Uaçá Incised, the rim and vessel shapes are represented by such small samples that no shape trend is observable within each type, although certain forms are restricted to each of the pottery types (figs. 41, 42, 45).

In an attempt to see if certain common rim and vessel shapes showed distinct trends throughout the Aristé Phase, similar forms in the various pottery types were combined into nine common shapes, each of which was given an alphabetical designation for form and a short descriptive name. Into this scheme (Appendix, tables 19 and 20) the forms of each pottery type were tabulated and the percentage occurrence calculated in order to establish the common rim and vessel shapes for the Aristé Plain.

Two observations are outstanding: (1) Certain shapes are restricted to the cemetery sites, and (2) there are distinct trends of certain of the common shapes throughout the Aristé Phase sequence. Although the time span for the Aristé Phase is apparently not very long, and hence the amount of change in some of the forms is not outstanding, certain gross trends in the rim and vessel shapes are apparent: (1) Common form A, a collared, cambered jar with a round or low-waisted body, decreases from a high of 46.1 percent at the lower part of the cemetery sequence to 11.7 percent at the top; (2) common form E, a bowl with a constricted mouth, decreases from 20.0 percent to 11.2 percent in the habitation site sequence and from 20.0 percent to 11.7 percent in the cemetery site sequence; (3) common form F, carinated bowl with flangelike rim, decreases from 15.3 percent and 15.6 percent to 5.2 percent and 5.9 percent in the upper part of the cemetery site sequence; (4) common form D, a slightly carinated bowl with an everted lip, increases from between 7.8 percent and 3.1 percent to 17.3 percent in the cemetery sequence. In the habitation sites the trend of common form D is obscured by certain small samples which warp the percentages, however, if these are ignored the larger samples show an increase in popularity from 21.2 percent to 43.8 percent throughout the habitation site sequence of the Aristé Phase.

With the sequence established from the larger samples from our own sites and the first-hand study of documented museum collections, it is possible to interpret some of the sketchy data resulting from other investigations (pp. 123–131). Although much is to be desired from the comparative materials, at least there appears to be no gross conflict of any sort with the ceramic trends established for the Aristé Phase. Since the sites with a high percentage of incised pottery (i. e. Uaçá and Daví Incised) are in the earliest part of the sequence, Ilha do Carão and Açahyzal probably seriate in this position. The absence of trade materials from both of these sites adds confirmation to this conclusion. Those sites with a large number of graters (like our Sites A–12 and A–16) and a high percentage of the elaborately painted, bichrome and polychrome Serra Painted (as typified by A–19—Cunaní Site), belong to the middle and upper part of the Aristé Phase time sequence. As a result, sites with pottery resembling the Cunaní pottery shapes, surface painting, anthropomorphic and zoomorphic modeling, and peculiar holes punched in the vessel bases must be considered as approximately the same time period, which is just before European contact. Such sites are the Rio Aracauá sites of Kaupí and Ulakté-Uni, the Igarapé Tartarugalzinho site, the Rio Oiapoque site, and possibly Courbaril and Coumarouman on the Rio Uaçá. The presence of so much European trade material with the Monte Mayé finds of Serra Painted seriates this site with the post-European site of A–15—Vila Velha.

As the discussion in the preceding section on nonceramic artifacts indicated, stone artifacts are too rare and undifferentiated to reveal any trends or changes in style to supplement the time sequence based on pottery.

DIAGNOSTIC FEATURES OF THE ARISTÉ PHASE

The Aristé Phase is distributed throughout the northern half of the Territory of Amapá, bounded by the Rio Oiapoque on the north and the Rio Araguarí-Amaparí on the south. Variations of nonceramic artifact material through the entire region are minor. A seriation of the ceramics indicates a shift from the popularity of incised (Uaçá Incised) and scraped (Flexal Scraped) decorations and very gritty, sand-tempered plain ware (Aristé Plain) to a preference for painting (Serra Painted) and a smooth, sherd-tempered plain ware (Serra Plain). Painted wares occur in all periods in the cemeteries, which consistently show a much higher frequency of decorated wares than do the village sites.

Burial urns are characteristically deposited in high rock shelters or caves, but when such natural recesses are not available, either direct interment of the jars or specially constructed subterranean shafts with alcoves take their place. No plan could be ascertained in the arrangement of the burial urns in the caves. The burial urns, often modeled or painted in anthropomorphic figures or faces, are generally not provided with lids. They contain a mixture of dirt and bones of either secondary or cremated burial, cremation being the more common and also the more recent practice. In rare instances a small stone ax, a small figurine, nephrite pendants or glass trade beads were placed with the bones of the deceased, but miniature jars or bowls were never among the offerings.

Occupation sites, averaging 100 meters in diameter, are not found in close proximity to the burial sites, and in all cases consisted of extremely shallow refuse, usually no more than 5 cm. in depth. They are typically located on natural high land free from flooding and with good drainage, near a constant water supply provided by either a lake or an *igarapé*. No architectural features could be ascertained, but the fact that the refuse deposits consist of heavy concentrations of sherds upon sherds with little intermixture of dirt and no evidence of a dirt floor suggests the use of houses on piles with raised floors similar to the structures used in the region today. The ceramics of these habitation sites are generally nondescript with the exception of sherds with deep parallel grooves on the interior that may have come from graters.

The presence of a few Aristé Plain sherds at the stone alinements of Aurora (A–8) and Açahyzal is indicative of the occasional use by the Aristé Phase of former Aruã Phase sites.

Besides pottery, only stone artifacts have been preserved. A few ungrooved axes and hammerstones, all well-polished granite or diorite with a slightly curved, bifaced bit, indicate a well-developed stone-polishing technique or trade with a group practicing such an art.

No specific information is available on the length of occupation in the region, and the application of absolute-dating techniques does not, at the moment, seem feasible. We could be dealing with a small population over a long period of time, or a large population over a short period of time. However, all factors considered, it appears that the culture of the Aristé Phase was not present in the region for any great length of time before the arrival of the first Europeans in the early years of the 16th century.

CONCLUSIONS AND INTERPRETATIONS

The historical position of each Phase, its role in the cultural development of the Territory of Amapá and its relationships to the total picture of the prehistory of the Lower Amazon and northern South America can now be outlined.

No preceramic sites have been found in the Territory of Amapá, although shell middens are reported from the Middle Amazon and from British Guiana (Gillin, 1948, p. 821; Osgood, 1946, pp. 23–37; Evans and Meggers, MS.). The possibility of discovering preceramic hunting, fishing, nonshellfish-gathering cultures is virtually nonexistent owing to the limited use of stone artifacts and the perishable nature of other materials employed instead.

The Aruã Phase, the first pottery-producing culture, entered the Territory of Amapá with an established ceramic tradition. Although the early form of Piratuba Plain is often crude, it by no means suggests a group just learning the ceramic art or having just received the idea by diffusion. By tracing similarities in pottery decoration, stone artifacts and stone alinements, it is possible to make a good case for a northern derivation of this culture (see pp. 548 ff. for details). This makes the Aruã the only archeological Phase to have come to the mouth of the Amazon from this direction. Their occupation of the Territory of Amapá appears to have been brief, and shortly prior to European contact they abandoned the mainland for the Islands of Mexiana, Caviana, and Marajó, where they survived into the pages of recorded history. The absence of a time gap between the departure of the Aruã and the arrival of the next cultures suggests that the former were forced either by gradual population pressure or by more overt coercion to vacate the mainland coast.

Who were the groups that displaced the Aruã? The archeological record shows two Phases, the Mazagão and the Aristé, developing contemporaneously in adjacent regions of the Territory of Amapá until the time of their disruption by European contact. Although these Phases are distinct throughout their local history, there is evidence that they may have differentiated from a common base about the time of their entry into the Territory. Jarí Scraped sherds from São João and Bom Destino, both early Mazagão Phase sites, are almost identical in design, motif, method of execution, and general ceramic features (sandy temper, rough surface, tan color) to Flexal Scraped from Sites A–16, A–12, A–11, and A–10—Inside Cave, all early sites of the Aristé Phase. Associated with the scraped wares in both regions is a type of incised decoration not found in the later sites, or found in greatly diminished percentage: Uxy Incised in the south, and Daví and Uaçá Incised in the north. This combination of scraped and incised traditions with similar motifs argues for an early affiliation or a first-cousin relationship between the two Phases. The initial use of a light-orange to grayish-tan surfaced, sandy, quartz or sand-tempered pottery in both Phases lends further weight to the theory of a common origin, while the parallel transition from this pottery to a smoother, sherd or *cariapé*-tempered ware may be attributable to independent evolution. In other words, while it is not peculiar to see the Aristé Phase emphasizing curvilinear painted decoration in its later stages of development, or to see the Mazagão Phase developing rectilinear incision and applique, it seems more than coincidence that both of them began with plastic decoration of a similar type and with a dominant sandy-textured plain ware.

The immediate origin of the ancestral Mazagão-Aristé Phase can only be vaguely postulated at this time because of the paucity of scientific archeological information from a major part of northern South America. The known materials from coastal Venezuela, the Lower Orinoco, Trinidad, the Antilles, and British Guiana bear no resemblance to the early level materials of the Mazagão and Aristé Phases. The limited collections from Dutch Guiana (Goethals, MS.) show affiliations with the Aristé Phase of the northern part of the Territory of Amapá, but these appear to represent influence from the later rather than the ancestral form. The various cultures delineated by stratigraphic excavations on the islands in the mouth of the Amazon (see fig. 205) are not even remotely related to the Mazagão or Aristé Phases in the Territory of Amapá. This evidence, although admittedly incomplete, seems to indicate that the ancestral Mazagão-Aristé Phase was not derived from the north by the coastal route, and that some other area and route within northern South America must be sought. However, comparative material is even sparser and more poorly documented in the Amazon area than in Venezuela and the Guianas. Examination of sherds from Itacoatiara on the Amazon River in the collection of Sr. Frederico Barata revealed a few with complicated, interlocking, rectilinear, incised patterns (pl. 88, *e–f*) similar to the complicated incised designs of Uaçá Incised from the Aristé Phase (pl. 26, *d–g*); however, the paste characteristics are not similar.

There is no doubt that such connections are tenuous, but in our present stage of knowledge of the archeology of the Middle and Upper Amazon, every scrap of evidence must be used. The negative evidence of movements from the north plus this scanty, but related, material from the Amazon suggests that the Mazagão-Aristé Phases of the Territory of Amapá must have entered, or at least been influenced, from the Amazon or one of its many upriver tributaries rather than from the Guianas, coastal Venezuela, or the Antilles. Although the northeastern part of Brazil is poorly known from an archeological standpoint, the few bits of data from this region do not suggest any influence of importance on the cultures of the Amazon until historical times.

After the postulated ancestral Mazagão-Aristé culture became established over the whole of the Territory, the initial unity gave way to diversity resulting both from evolution in the absence of further contact with each other and from influences independently received from different sources. While there is nothing to indicate that the Mazagão and Aristé were hostile to one another, neither is there any evidence of intercommunication. Not a single trade sherd from the Aristé Phase was found in any Mazagão Phase site, or vice versa. With two exceptions, the sites of the two Phases are separated by the wide, swift-running, forest-bordered, low-banked Rio Araguarí-Amaparí. The exceptions, two Aristé Phase sites south of this river, have already been discussed (p. 118), but in review it is pertinent to mention that Site A–13—Matapí was nothing more than a campsite, probably not used more than once or twice, and Site A–14—Macapá represents such a variation from the typical Aristé Phase materials that it is undoubtedly explained as a late transplantation of the Indians by the Europeans when they began to fortify and settle the area (p. 564). A week spent in survey of the Rio Araguarí-Amaparí brought forth not a single site, adding to the distributional evidence which leads to the conclusion that it was a frontier and a sort of aboriginal "no-man's land," between the Mazagão Phase to the south and the Aristé Phase to the north.

The first half of the Mazagão Phase represents an undisturbed evolution of the various ceramic styles. Jarí Scraped dies out, the quality of Uxy Incised declines, the plain ware continues to be a light gray to light tan in surface color. By the time of Site A–6, a distinction is beginning to emerge between a sandy, quartz and mica-tempered ware and a smoother, *cariapé*-tempered ware. At the succeeding site, A–2, several innovations suddenly appear, arguing for a strong outside influence. These are: (1) Precisely executed, chalk-filled, rectilinear, incised designs (Anauerapucú and Piçacá Incised); and (2) completely oxidized firing of Mazagão Plain, producing a brick-red surface color.

The late incised styles of the Mazagão Phase are distinctive and their origin should be easily traceable; however, the great gaps in our knowledge of the archeology of northern South America make the identification less positive than might be desired. An extensive search through the literature and museum collections reveals some comparable styles. An examination of the sherds in the University Museum of Philadelphia from Arauquin, Apure, Venezuela, collected by Petrullo, as well as inspection of the illustrations of his report (1939), shows a great similarity in incised designs to the Mazagão Phase materials. Further examination of the Late Arauquin and Late Ronquin Aspects on the Orinoco, as defined by Howard (1943), adds more illustrative information. The incised rectilinear spirals, parallel lines, nicked rim edges associated with lines, diagonal units and meanders of the Middle Orinoco (pl. 86) shown by Petrullo (1939, pl. 31, 1c, 1d, 1f, 2f, and pl. 32, j, l) and by Howard (1943, fig. 71 and pl. 6P) are motifs also executed on Piçacá and Anauerapucú Incised (pl. 11, 12).

In addition to these similarities with Middle Orinoco sherds, the chalk-filled, rectilinear incisions of Anauerapucú Incised compare rather closely in technique with specimen No. 24243 (pl. 87, *a*) in the Division of Archeology of the United States National Museum from Manizales, 60 miles southeast of Medellin, Colombia. This is not to argue that this Quimbaya style of incised vessel is directly related to Anauerapucú Incised. It is not, for the shape and paste characteristics are different, but the technique of incision and the filling of the incisions with a white substance in both areas is worth mentioning. Incisions and punctates filled with lime or white paint are typical of another archeological zone in Colombia, the Tierradentro, but here the only similarity to the Territory of Amapá sherds is the use of a chalk, white paint, or lime in incisions or punctates (Bennett, 1946, pl. 175). Unfortunately, the chronological sequences in Colombia are in dispute and few authorities agree on the exact position of these cultures, hence no accurate check can be made to compare them sequentially with development of the Mazagão Phase in the Territory of Amapá.

If either, or both, the Middle Orinoco of Venezuela or some part of Colombia can be considered a possible source of some of the incised traditions found on the mainland in the Lower Amazon, some explanation is needed to account for the absence in the Territory of Amapá of the other ceramic traditions associated with these wares in Colombia and in the Middle Orinoco. The modeled tradition associated with the incised style in the Arauquin and Late Ronquin Aspects of Venezuelan sites either did not diffuse or was not accepted by the Mazagão Phase. A third alternative explanation, that the modeled tradition reached the Middle Orinoco of Venezuela subsequent to the diffusion of the incised tradition out of the area and eventually into the Territory of Amapá, cannot be evaluated until more is known of the ancestry of the Late Ronquin and Arauquin cultures. The theoretical point of view, that the modeled tradition was not accepted even though the incised one was received in full force, might be explained by the fact that, while familiarity with the incised technique made the Mazagão Phase receptive to innovations in motif, modeling had only a rudimentary development, primarily as applique, and therefore the introduction of the elaborate modeling of the Late Ronquin and Arauquin style would have entailed a radical departure, which was refused. Granted, these theories lack adequate documentation but with such a vacuum in the archeological information between the upper reaches of the Orinoco and the Territory of Amapá in Brazil, they offer the only means of explaining the Mazagão Phase innovations.

When theories of this sort are proposed, they are often evaluated in terms of the feasibility of the route of influence or migration that is implied. In this case, the route is indeterminable at present because the area between the Territory of Amapá and parts of the Upper Orinoco and Middle Orinoco is a blank, archeologically speaking. However, since none of the similarities just discussed are represented in the Aristé Phase, which occupies the northern part of the Territory of Amapá, the possibility of a migration from the north down and around the Atlantic Coast and up the Amazon does not seem to have archeological support even though it has been the more often suggested movement (Steward, 1948 b, p. 885; Willey, 1949, b, pp. 195–196 and map 3). With this evidence, then, the inland waterways rather than a coastal migration seem to be the answer.

In addition to this strong influence from outside of the Territory of Amapá leaving its impact on the incised styles and the plain ware of the Mazagão, the late Mazagão Phase copied from the adjacent Maracá tradition. The results attained in this effort indicate a more tenuous relationship with the Maracá culture than with the more remote one in the Orinoco. Whereas the Orinoco styles are closely reproduced and affect certain paste characteristics as well as design motif, the Maracá similarities may be interpreted as reconstructions from memory of a form only briefly glimpsed. There is no modification in the basic ceramic. The two cylindrical, anthropomorphic urns found in the Mazagão Phase cemeteries (pl. 3, *b;* fig. 12), are sufficiently different in detail of construction, such as the manner of attachment of the legs, the attachment and angle of the arms, the position of the feet, the execution of the bench legs, the shape of the head, and the addition of modeled bracelets or necklaces and painted designs, to dispose of the inference of direct copying or trade vessels. Yet, the basic similarity in general body shape, tubular construction, anatomical details of wrist and ankle bones and sex identification, position on a bench sometimes ornamented with an animal head and tail, and identity in function as an urn for secondary burial, leaves no doubt that a Maracá influence is involved. The large *jaboty* (turtle) urns characteristic of the Maracá tradition (pl. 17) appear less frequently. However, a large foot from cemetery A–3 (fig. 6) must have belonged to such a jar and it shows the same kind of deviation in specific detail of execution that appears on the anthropomorphic urns.

The geographical restriction and cultural uniformity of the Maracá tradition argues for a very short occupation of the Rio Maracá area, which the presence of glass beads places about the time of European contact. The place of origin of the tradition is not known definitely, but it is much less obscure than the source of some of the other ceramic styles in the Territory of Amapá. Anthropomorphic figures seated upon clay benches have been reported from Popayán, Quimbaya, and other parts of the Cauca valley in Colombia (Bennett, 1944 a, figs. 11A, 17B, 17C, pl. 10F; Willey, 1949 b, pl. 39c; Imbelloni, 1950, pl. 26 No. 24), from Manabí, Imbabura, and Carchi Provinces in Ecuador (Uhle, 1929, pls. 6, 10; Gonzalez Suárez, 1910, pl. 5, fig. 1, pl. 7, fig. 1; Saville, 1910, pls. 86, 87, 88; Jijón y Caamaño, 1920, pl. 41) and from the region of Bocono and Niquitao in the State of Trujillo, Venezuela (Imbelloni, 1950, pl. 26 No. 25 and No. 27, figs. 14, 15; Kidder II, 1944, pl. 17, 18–32; Kidder II, 1948, pl. 75G). Although each of these figures and the clay benches upon which they sit exhibit features peculiar to their own areas, certain similarities suggest a common origin. These include the small clay bench, 4–8 cm. high, usually on four legs; the cylindrical body of the figure, tall in proportion to its diameter; painting sometimes on the body; the predominance of male sex over female; the cylindrical arms with elbows generally akimbo and hands commonly resting on the knees; the hands and feet crudely modeled and stylized, often with 3 to 7 fingers and toes shown by light incisions; and swollen calves suggesting the use of ligatures. Similar anthropomorphic figures not, however, seated on benches have been found in the above areas and also in eastern Bolivia (Imbelloni, 1950, pls. 17, 18).

For the purposes of this comparative study, it was felt that sufficient evidence of similarity of style was presented by restricting the comparison to anthropomorphic figures seated on clay benches. Their concentration in the Andean region of Colombia, Ecuador, and Venezuela suggests this area as a possible source of the Rio Maracá style. Whether the Lower Amazon material represents a migration or diffusion out of one of the above-mentioned areas with a local variation developing in the Rio Maracá, or whether it is one of many lines of diffusion and influence out of an undetermined central source, only future work will prove. Imbelloni has recently pursued this subject in greater detail, embracing all styles of anthropomorphic urns and comes to a similar point of view:

> In conclusion, the center formed by Maracá and its branches was influenced by a modeling tradition separated from the main Venezuelan-Colombian stem, to which belonged the classic, seated male figure, with or without a bench. [Imbelloni, 1950, p. 119.]

The Aristé Phase in the northern part of the Territory of Amapá, in contrast to the Mazagão Phase, does not appear to have enjoyed a preliminary period of undisturbed development. The earliest cemetery sites excavated, the Caves of A–11, exhibit traits absent from the early Mazagão Phase. Most prominent of these are burial in caves instead of in the open, the use of painted decoration on burial urns, and the practice of cremation instead of secondary burial. Other innovations include the cambered collar and the flaring lip with prominent lobes on cemetery vessels and the graters in the habitation sites. If the argument for an early affiliation between the two Phases is valid, these traits just mentioned must be laid to local invention or to an influence that did not penetrate south of the Rio Araguarí-Amaparí.

The early predominance of painting in bands and/or over the whole surface of the vessel fades away in a gradual transition to the elaborate linear motifs as typified in the distinctive Serra Painted style on the vessels collected by Goeldi from Cunaní (pl. 24, *c–e*). This gradual shift of decorative styles and techniques is suggestive of local evolution. Such a conclusion finds support in an absence of affiliation between the complicated painted motifs of Serra Painted and other known painted styles from northern South America. Although the later developments suggest indigenous evolution, the fact that some form of painting begins with the earliest occupation levels of the Aristé Phase rather than after the Phase was well established lends weight to the supposition that the *initiation* of a painted style is to be attributed to outside influence. The sherd-tempered Serra Plain (which closely resembles Piratuba Plain of the Aruã Phase in paste features) begins at the same time. Both painting and sherd temper are Aruã Phase traits, and there is a possibility that while they were displacing the Aruã, the people of the Aristé Phase were influenced by their ceramic styles. The fact that the Aruã Phase is weakly represented south of the Rio Araguarí-Amaparí would account for the absence of a comparable influence on the Mazagão Phase.

Comparative material for the Aristé Phase is also restricted by the lack of extensive archeological work in French and Dutch Guiana. The Reichlens' (1947) comments on French Guiana are interesting but not usable from a comparative ceramic standpoint. Dutch Guiana is almost unknown except for the limited excavations made in the Paramaribo area during the summer of 1951 by Peter Goethals (MS.) of Yale University. Our examination of Goethals' sherds revealed no significant similarity to the Mazagão Phase, but a large amount of the pottery showed close resemblances to the sand-tempered Aristé Plain, the sherd-tempered Serra Plain, and such decorated types as Uaçá Incised, Daví Incised, Aristé Painted, and Serra

Painted. A comparison of some of the most distinctive and characteristic vessel shapes of the Aristé Phase with the Dutch Guiana materials reveals an occurrence of two shapes in both areas: the large, open carinated bowl with wide, flaring rim lobes (Aristé Painted, form 5) and the carinated bowl (Serra Painted, form 3). The flat base with an angular junction with the side walls, so common to most of the pottery types of the Aristé Phase is also the most frequent base shape among the vessel fragments from these coastal Dutch Guiana sites. The application of red paint to the lip and rim edges, common on vessel forms 3 and 4 of Aristé Painted and form 1 of Serra Painted, is repeated on the painted sherds from the Paramaribo area. Further similarities are evident in the Dutch Guiana scraped and incised sherds, which resemble in technique and design elements Uaçá Incised, Daví Incised, and Flexal Scraped from the Territory of Amapá.

Further work in the Guianas should strengthen the cultural connections of the Aristé Phase of the Territory of Amapá with the north. When these areas are more thoroughly surveyed from an archeological standpoint, it will probably be possible to extend the boundaries of the Aristé Phase into French and Dutch Guiana. The more elaborate painted style and the complex jar shapes of the late Aristé Phase may not be discovered, however, in the other Guianas. Since these features appear to be wholly post-A. D. 1500, they may be confined to the northern Territory of Amapá, where the aboriginal culture seems to have escaped for a longer time the disrupting effects to which the adjacent parts of the Guianas were subjected (see p. 565) and to have enjoyed as a result a longer period of indigenous development.

The presence of cremation in the Territory of Amapá is more difficult to explain. The secondary burial found in the same jar with a cremated body at Site A–11, Cave 2, probably represents the last survival of this earlier method of disposal of the dead. Since cremation with the deposition of the ashes in a pottery vessel is absent in the southern part of the Territory of Amapá except in the Rio Maracá region and is found only in the late Marajoara Phase on the islands in the mouth of the Amazon, with no other reliable definition of this burial trait in archeological sites in the Lower or Middle Amazon, these areas do not seem likely to have furnished the influence that introduced cremation into the Aristé Phase. It may have come from the north, but the sketchiness of our knowledge of the distribution of cremation prevents a more specific statement. Perhaps supporting evidence can be gleaned from the fact that it is practiced among the Rucuyen and Atorai of the Guianas. It is generally considered the rarer funeral practice, with the Rucuyen placing the ashes in a pot which is kept by the widow, while the Atorai bury the ashes (Gillen, 1948, p. 851; Roth, 1924, pp. 641, 664–665). Among the Wai Wai Indians at the headwaters of the Essequibo River in British Guiana and the Mapuera River in Brazil, cremation with the placement of pottery vessel over the ashes was common until recent times (Evans and Meggers, MS.). Although Gillen (1948, p. 851) in a summary article on the Guianas states that archeological evidence along the Orinoco reveals that cremation as well as urn burial was common, the primary sources on this area (Kidder II, 1944; Osgood and Howard, 1943; Osgood, 1943) mention only urn burial and secondary burial.

The two shaft graves from Goeldi's Cunaní burial site (A–19) present another problem. Either this practice was locally invented, as suggested by Goeldi (1900, pp. 22–23) in his explanation that it substituted for the natural caves otherwise used but absent here, or the idea was received by diffusion. To date, the only reported South American shafts of this style come from the Rio Pichindé Complex, Rio Bolo Complex, and Quebrada Seca Complex of the Upper Cauca River, Colombia (Ford, 1944, figs. 2, 6, 7, 10, 12), and from the Quimbaya region of the Middle Cauca River, Colombia (Bennett, 1944 a, p. 59; 1946, fig. 92). Although these Colombian shaft burials with oval antechambers are almost identical in shape and construction to the ones at the Cunaní site, the burial pattern within the chamber differs. In Colombia, secondary burial or direct inhumation with offerings of plain ware and/or crude incised or applique-modeled vessels was the common practice as compared to cremation urn burial in painted vessels in the Territory of Amapá. If the idea of an antechambered, shaft tomb had been received by diffusion from the groups using the same structure in Colombia, it seems probable that other items of the burial complex and possibly some pottery styles would also have been transferred to the Aristé Phase. A third isolated occurrence of the antechamber, shaft grave in the Piedmont Region of North Carolina (Coe, 1949) strengthens the case for independent invention. The formal similarity of all these burial chambers can be laid, in part, to the structural limitations on digging a shaft-burial chamber: the domed antechamber roof reduces the danger of cave in, and the chamber to one side of the main shaft served the function of facilitating removal of dirt rather than a purely aesthetic purpose. These structural features which limit the shape and general design, added to the distribution of the trait in isolated and widely separated areas, and the absence of associated traits indicating diffusion, strengthen the likelihood that the appearance of shaft burials in the Aristé Phase in the Territory of Amapá can be considered an example of independent invention.

In summary, the results of the preceding analysis of cultural development in the Territory of Amapá and comparison of traits found in this region with those from other parts of northern South America can be digested into the following points:

1. Ceramic-using cultures arrived in the coastal region north of the Amazon in late precontact times.
2. Prior to this time, the region was probably occupied by a preagricultural, hunting and fishing population, or a preceramic, agricultural group.
3. There is evidence that the first ceramic-using Phase in the Territory of Amapá, the Aruã, is derived from the north.
4. The Aruã Phase was forced out of the Territory of Amapá and onto the islands in the mouth of the Amazon by the incoming ancestral Mazagão-Aristé Phase.
5. The postulated ancestral Mazagão-Aristé Phase was probably derived from farther up the Amazon or one of its tributaries and did not come along the coast of the mainland from a northerly direction.
6. Once established in their respective areas, the Aristé and Mazagão Phases developed independently of each other, and show no evidence of contact in the form of trade or influence.
7. About, or just prior to, contact times (A. D. 1500) the Mazagão Phase was strongly influenced by a culture with an incised style of decoration resembling the Late Arauquin and Ronquin of the upper Middle Orinoco, coming by way of an inland route rather than via the coast.
8. The Aristé Phase was subjected to different influences, which introduced cremation and painting of pottery into the area in late pre-European times.
9. The anthropomorphic, seated figures of the Maracá tradition in the southern part of the Territory of Amapá show the closest affiliations with the Andean area of Ecuador, Colombia, and Venezuela, and suggest a derivation from this area about the time of European contact.

MARAJÓ ISLAND

GEOGRAPHICAL DESCRIPTION [14]

Marajó is the largest of a multitude of islands that divide the Amazon into many channels as it nears the Atlantic Ocean (fig. 47). Although the main flow of the river passes along its western and northern shores, numerous *furos* or narrow passages direct part of the water into the Rio Pará and the Baia de Marajó, which separate the island from the mainland on the south. So strong is the force of the outpouring fresh water that the salt sea approaches the Cabo Maguarí only toward the end of the dry season, when the diminished river gives way before the incoming tide. The equator passes 0°5′ to the north of the northern coast, and the 49th and 50th meridians divide the island into almost equal thirds. The best estimate of dimensions comes from the World Aeronautical Charts prepared from aerial photographs, on which Marajó is shown as 265 km. (165 miles) long from east to west and decreasing in width from 180 km. (110 miles) near the west end to 150 km. (95 miles) at the mouth of the Rio Ararí.

As one goes from east to west, there are two other changes in addition to the gradual widening of the island that are of importance: the decline in elevation and the alteration of the vegetation. From the eastern coast, which rises 5 to 6 meters above the water at high tide, there is a gradual slope toward the west until the land left by the strainerlike mesh of streams is in constant danger of being inundated by the high tides that come twice each day. The surface is not perfectly level, but the depressions and rises are so slight that they are noticeable only in the rainy season when most of the patches of forest on the eastern part remain free from the water that inundates the *campos* and turns them into a vast shallow lake. By the middle of the summer (August), most of the floodwaters have drained off except where they are trapped in depressions. Evaporation and months without a heavy shower usually result in the drying up of these areas before the advent of the next winter's rains. There are a few places where the marsh is especially large and floored with soft oozing mud that will bear only the lightest weight, and here a special term, *mondongo*, is applied. Ferreira Penna gives a good description of one on the northeastern part of Marajó:

> This name is given to a marsh of vast extent, 10–12 miles inland from the north coast and reaching from the headwaters of the Rio Cururú eastward almost to

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[14] For an excellent description giving the impressions of an early visitor, see Anonymous, 1907.

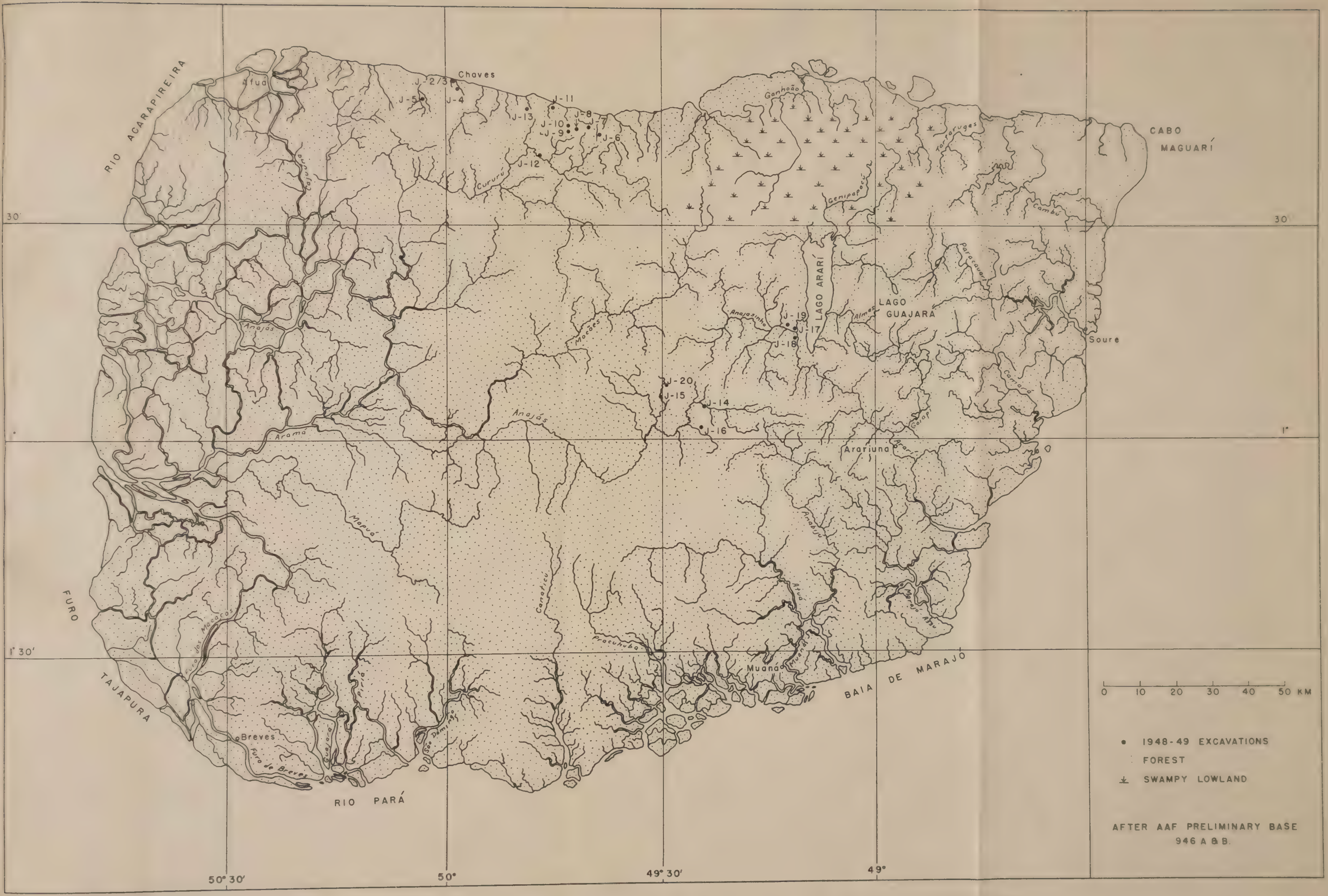
RIO ACARAPIREIRA
Afuá
Chaves
J-2/3
J-5
J-4
J-11
J-13
J-8
J-10
J-7
J-9
J-6
J-12
Cajuúna
Cururú
Ganhoão
Tartarugas
Genipapocú
Cambú
CABO MAGUARÍ
30′
30′
Paracauari
LAGO ARARÍ
LAGO GUAJARÁ
Almas
Anajasinho
J-19
J-17
J-18
Soure
Anajás
Mocões
Camará
J-20
J-15
J-14
J-16
Anajás
Aramá
Goiapi
Arariuna
Arari
1°
1°
Mapuá
Anabijú
Canaticu
Atuá
Marajó Açu
FURO
1° 30′
Furo dos Macacos
Pracuúba
Muaná
Muaná
BAIA DE MARAJÓ
TAJAPURA
Breves
Furo de Breves
Guajará
Piriá
São Domingos
RIO PARÁ
0 10 20 30 40 50 KM
● 1948-49 EXCAVATIONS
FOREST
SWAMPY LOWLAND
AFTER AAF PRELIMINARY BASE 946 A & B.
50° 30′
50°
49° 30′
49°

FIGURE 47.—Marajó Island, showing major streams, vegetation pattern, and the location of archeological sites.

> the coast. Within its limits are formidable mires, several small lakes, various islands and above all, an infinity of swamp vegetation, especially *Atingas* (*Caladium arborescens*) among which are concealed millions of reptiles that make the approaching of these solitudes a dangerous thing. . . .
>
> At the onset of winter, the *mondongos* collect a large part of the rain water, and rapidly filling, begin to extend themselves by means of the natural drainages. These outlets are the rivers Tartarugas, Ganhoão and Arapixy, which empty into the north coast; the Cururú, which flows westward; the Mocoões, leading southwest into the Anajás; and the Genipapucú and perhaps the Apehy, the former flowing from northeast to southwest and the latter from north to south, both ending in the Lago Ararí. [*In* Derby, 1898, pp. 164–165.]

The explanation for the differing elevation lies in the geological structure of Marajó. The foundation of the eastern part of the island, like that of the adjacent mainland to the south, is a stratum of red sandstone (*gres vermelho*). An outcrop of this deposit appears in the bed of the Rio Ararí about 30 km. upstream from its mouth and produces a small rapid at low tide, which gave the town of Arariuna its former name of "Cachoeira." Except for this and the vicinity of Ponta de Pedras on the south coast, the island is devoid of visible stone. The central, northern, and western parts are predominantly alluvial deposits built up behind the original rocky obstruction by the silt-laden waters of the Amazon (Rich, 1942, pl. 28).

The vegetation pattern seems at times to be correlated with the elevation of the land and the drainage pattern, and yet there is no complete consistency. It is customary to say that a line drawn from Afuá in the northwest to Mauná, opposite the mouth of the Tocantins on the south, marks the approximate division between the *campo* or grassland and the forest. Actually, a large part of the eastern half of the island is also occupied by forest, which forms a wide coastal belt (Rich, 1942, pl. 27) and fringes all the major rivers and many of the smaller ones (pl. 27, *b*). Except in the region between Lago Ararí and the east coast (Rich, 1942, pl. 29), there are no large vistas in which the *campo* is free from scattered trees or from clumps or *ilhas* of forest (pls. 28, 29). "Island" is an appropriate designation for these clumps of trees for two reasons: as a figurative expression it suggests their dry-season appearance, irregularly scattered over the *campo* like islands in a sea, and in the rainy season it has literal accuracy, because the trees grow on slight rises that remain above the waters covering the *campo*. The coastal forest belt is widest along the south, where its elevation of some 2 meters above high tide makes it exploitable by slash-and-burn agriculture, which is carried on up to the present time (pl. 27, *b*). Derby (1898, p. 168) reported that in 1898 sugarcane and cacao were being cultivated there profitably.

The dense and unbroken forest covering the southwestern half of the island is not usable for agriculture because of the poor drainage of the land (pl. 27, *a*). As a result, in spite of the network of navigable rivers that provide ready access, settlements are sparse even today and the inhabitants are mainly rubber-gatherers. Hartt's description of the area around the town of Breves would be applicable anywhere in this part of Marajó:

> Here and there along the canals of Breves are eminences of land similar to that where the town is located, but, in general, the borders of the river are inundated with each high tide and the scattered houses are built on poles to raise them above the water. The canals are narrow, extremely deep and filled with muddy water. Whether the tide is in or out, they are always swollen as though it were high. And how rich the vegetation that borders them! Here is found the *mangues* with its beautiful green foliage, its arched main roots, its pendant areal rootlets with trifurcated tips and its cigar-shaped seeds; there the channel is bounded on both sides by walls of vegetation, the tips of the branches grazing the water at high tide and stopping the beautiful rafts of grass and broad-leafed *mururé* with its blue flowers; and further on we see for many kilometers the majestic *muritís* with their superb fan-shaped leaves, their dead branches yellow and drooping, and supporting their heavy clusters of scaly fruits. Here and there the graceful and slender trunks of the *assaí* palms lift into the sunshine their delicate green fronds and seem to fringe the band of broad *murití* leaves. The *ubassú*, stout and vigorous like a giant amaranth, joins with the lance-leafed *aningas* and the *mimosas* to fill the spaces between the trunks of the palms. This is the perfection of the vistas along the Amazon. The calm brown waters of the high tide; the floating plants; the dark green shadows in the water beneath the dense foliage of the bank; the bending palms; the wall of vegetation, seemingly as solid as a wall of stone; the glint of the sun's rays on the blue wings of the *morpho* butterfly as it flits across the river; the flock of parrots, appearing two by two, their wings fluttering against the dark blue sky sown with silvery clouds; the soar of the lovely kingfisher, poised at one moment on a high branch and suddenly flinging itself at a *piába*, which it carries from the water sparkling in its mouth—all these produce a picture the traveler can never forget, and the effect of which is heightened by the warm still air, the perfumes and the agreeable languor of the tropics. [Hartt, 1898, pp. 174–175.]

Probably for the same reasons that make it poorly suited for human habitation today, the forested western part of Marajó seems to have been sparsely settled in pre-European times. At least, no sites or ceramics have ever been reported from the area. Of primary concern here, therefore, is the eastern two-thirds, in almost the exact center of which is Lago Ararí.

Lago Ararí is the largest of some half-dozen permanent lakes on the northeastern part of the island. It runs north-south, 16 km. long and 4 km. wide in the dry season, and is so shallow at that time of the year that it can be waded across (Derby, 1898, p. 165). With the inundation of the *campos*, the lake becomes greatly enlarged and increases to from 5 to 9 meters in depth. Even at its shallowest, it is not always a placid body of water, but is often whipped by a strong wind into choppy waves that make crossing in a small canoe a long and arduous task (cf. Lange, 1914, pp. 303–305). A number of small streams and *igarapés* flow into the lake from all directions, and it in turn functions as one of the major sources of the Rio Ararí. This river, because it provides access to the heart of the cattle region, has become of primary importance in the present economy of the island. Leaving the western shore of the lake about one-fourth the distance from the southern tip, and joined shortly by the Anajás-mirí (Anajasinho) coming from the west, it follows a generally southeastern course and enters the Baia de Marajó opposite the modern city of Belém. Most of its course is through *campo*, usually obscured from view by the wooded shore. Except near the mouth, where it widens considerably, the Ararí is 15 to 20 meters in width. The rise and fall of the tide are noticeable well above the town of Arariuna, where the only permanent obstacle to navigation, the rapid, is passable at high tide. Toward the end of the dry season the upper course becomes clogged with *canarana* (a coarse grass), which maintains a feeble hold on the soil and is readily torn loose when the rainy season strengthens the current. Massed together into deceptively solid islands, these plants float downstream and occasionally temporarily impede the passage of boats (Lange, 1914, p. 294; Derby, 1898, p. 166).

The Rio Anajás, by far the largest river on the island, originates in the *mondongos* north of Lago Ararí and in the *campos* not far from the middle Rio Ararí and takes a tortuous course, gathering many tributaries along the way, until it enters the Amazon at the west end of the island. Except for the upper reaches, it flows through forest, and although navigable it carries little traffic today. However, as an avenue leading into the center of the island from the west and readily accessible from the mainstream of the Amazon, it probably was the route by which some of the peoples identified with the intrusive archeological Phases penetrated to the northeastern half of Marajó.

Several short but wide rivers flow into the Rio Pará—including the Guajará, the São Domingo, the Canaticú, the Pracuúba, and the Atuá—all navigable and draining forest rich in wild rubber trees. Two important rivers, the Camará and the Paracuarí (formerly Igarapé Grande), flow east to the Baia de Marajó. At the mouth of the latter is Soure, the largest modern town on the island. A number of short streams and *igarapés* run north into the Amazon, but few are passable at low tide because of sandbars and sunken tree trunks and none extend far beyond the coastal band of forest. The primary access to the interior in the north is via the Rio Cururú, a tributary of the Anajás that runs generally parallel to the coast for a considerable distance.

At sea level, close to the equator and exposed to a constant breeze from the ocean, Marajó presents a seasonal variation marked by the presence or absence of rain rather than by differences in temperature, which has an average annual variation of only 1.5° C. (Le Cointe, 1945, p. 82). Although there are no figures available for Marajó, the annual rainfall at nearby Belém averages 2,551 mm. (104.3 inches) (op. cit., p. 86). The inception of the rainy season in December or January raises the level of the Amazon so that the water falling on Marajó is unable to drain off. The *baixas* fill and overflow and the lakes swell until the major part of the *campo* is transformed into a vast sheet of water, which the protruding tips of the grass blades make into a facsimile of endless rice paddies. After the water has stood a few months, succulent water plants and lily pads begin to appear where a short time before the land was parched, baked, and so dry that the hardiest grass withered and turned brown. The water also covers the low western end, creating a flooded forest known as *igapó*. Travel is possible everywhere in the interior by dugout, poling in the shallow places, paddling in the deeper ones. The shortness of the season prevents the growth of a dense and impenetrable mat of vegetation like that sometimes formed in rivers and shallow lakes, and before the introduction of the horse it was probably the time when the inland transportation and communication were easiest.

Although rain falls in Belém throughout the year, Marajó, Mexiana, Caviana, and the Territory of Amapá have a dry season of 3 to 4 months duration, during which almost no rain falls. Showers occur with diminishing frequency as May gives way to June, and the water begins to drain from the land, leaving soggy *campos*. The drying is a slow process, and early September often finds the *baixas* with considerable water and the soil of the *campo* damp enough to keep the grass bright green. The pink, morning-glory-like flowers on tall stalks and the yellow-blooming *carobeira* trees scattered over the plain give this time of the year the beauty and freshness of a northern spring. From September to December or January, it is a rare cloud that darkens the sky, and a rarer one still that brings so much as a sprinkle. The *campos*, small streams and *baixas* dry quickly, and even the *pirizais* and *mondongos* shrink considerably in extent. The soil becomes parched, dusty on the surface, and hard as cement. Vegetation on the *campo* becomes browner and dryer under day after day of undiminished sun. In December the clouds begin to build up more extensively than in preceding weeks, often to dissolve in the evening, but one day they do not and there comes the first shower, often followed by a bright rainbow that heralds the beginning of another year.

The marked difference between wet and dry season produces differential conditions of food supply. The greater number of wild fruits mature during the rainy season, including *cupuassú*, *bacurí*, *ingá*, *manga*, *jutahí*, *cacao*, *maracujá*, *assaí*, *bacaba*, and *mamão*. Not only does man find wild food more plentiful at this time, but the predominantly vegetarian animals are well fed and plump. The modern *caboclos* say that the rainy season is the best time for hunting, and even today when thousands of head of cattle roam the *campo* and men search the forests armed with guns, game is to be found in most areas. Among the most important animals are the *porco do matto* (*Dicotyles labiatus;* peccary), *paca* (*Coelogenys paca*), *anta* (*Tapirus americanus;* tapir); *cutia* (*Dasyprocta aguti;* agouti), *capivara* (*Hydrochoerus capivara*), *coati de bando* (*Nasus socialis*), *onça pintada* (*Felis onça;* jaguar), *preguiça* (*Bradipus tridactylus;* sloth), *tatú* (*Prionodontes gigas;* armadillo), *tamanduá-bandeira* (*Myrmecophaga jubata;* anteater), and numerous species of monkeys, of which the *guariba* (*Mycetes* sp.) or howler is one of the largest.

From the water come the *bôto* or porpoise, the *jacaré* or cayman (several species), and a great variety of fish of all sizes, flavors, and consistencies. Since these disperse over the *campo* in the wet season, fishing is most profitable when the lakes and rivers are smaller and the fish are more confined. Today weirs are used in the *igarapés*, where the fish are trapped with the falling tide, nets are employed along the coast and in the lakes, and *pirarucú* (*Sudis gigas*) are generally speared. The latter attain a length of more than 2 meters, a weight of 80 kilos, and are equally delicious fresh or dried. An early account speaks of fishing by poisoning the streams (Anonymous, 1907, p. 295). The water also yields turtles of several varieties, and their eggs, as well as those of the *jacaré* and *camaleão* (*Iguana tuberculata*), are considered delicacies by the people today.

Last, but by no means least, are the birds, present in variety and profusion. Of all the fauna, they are the most in evidence. No trip up an *igarapé* is without its glimpse of the blue and brown kingfisher perched on a high branch, the strange, brown-plumed *ciganas* roosting in the foliage along the shore, or a pair of gaudy, screaming *araras* (macaws) flying high overhead. The white-plumed *garça* (heron), the rosy *colhereira* (spoon-bill), the immense *tuyuyú*, the *jacú*, little brown *marrecas* (ducks), and great numbers of other edible birds, including parrots, are to be caught in the forest or on the *campo*.

In regard to useful plants of a nonedible nature, it is perhaps sufficient to mention that here as elsewhere in the Amazon there are the palms, fibers, timbers, and reeds yielding the raw materials for everything from baskets to houses, from dyes to canoes.

The resources of Marajó might be summarized from the point of view of human exploitation as rich in wild foods, but poor for agriculture except tree crops. A description of the potentialities about the year 1675, when cattle raising was still on a minor scale, probably gives a good approximation of the aboriginal condition:

> The island of Joannes has clear air, good water and good lands and pastures . . . There are . . . several fields in one part that are full of mango trees that give

> very fine mangos, and others with turtles, and forests where wild pigs can be hunted, as well as deer and various other edible animals. Also, its lakes and rivers are so abundant in fish that the national fishery located on its shores takes in enough *tainhas* to provide the city of Pará [Belém] with fresh and salted fish. The earth of this island is good for cane and in some parts for tobacco, and also for the planting of cacao trees, which in places grow wild, to the great advantage of the inhabitants [Betendorff, 1910, pp. 25–26].

Possessed of the Indian's knowledge of fish poisons, of the manufacture of traps and weapons, of the habits of the game, and of patience, stealth, and skill, no one would be threatened with starvation. Rather, the island could support a relatively large population, principally because of the excellent fishing conditions found in the combination of large and small streams, lakes and the Amazon itself. In view of this, and considering the slight amount of agriculture on the island today (almost totally concentrated in the southeastern border), it is probable that the cultures that came and went in prehistoric times lived primarily by hunting, fishing, and gathering, and only secondarily by agriculture.

TROPICAL FOREST PHASES

Four of the five archeological Phases discovered on the Island of Marajó exhibit characteristics in settlement pattern and in ceramics that show them to have been fundamentally like living cultures of the Tropical Forest Pattern. They have been designated as the Tropical Forest Phases to emphasize this similarity and to underline the great contrast between their simple culture and the vastly more complex one possessed by the Marajoara Phase. The four Tropical Forest Phases, to be described in chronological order, are (1) the Ananatuba Phase, (2) the Mangueiras Phase, (3) the Formiga Phase, and (4) the Aruã Phase.

THE ANANATUBA PHASE

Description of Sites and Excavations

Four habitation sites identified as belonging to the Ananatuba Phase are located on the Fazenda Santa Catarina, which occupies the section of the north coast of Marajó lying opposite the western half of Mexiana Island (fig. 48).

SITE J–7—SIPÓ

On the right bank of the Igarapé Tapéra, about 10 km. inland from the north coast of Marajó, is a village site 70 meters in length and averaging 25 meters in width. It is composed of two nearly circular mounds about 4 meters apart, joined by an area of less elevation but still higher than the surrounding terrain so as to produce an hour-glass-shaped mound with a northwest-southeast axis (fig. 49).

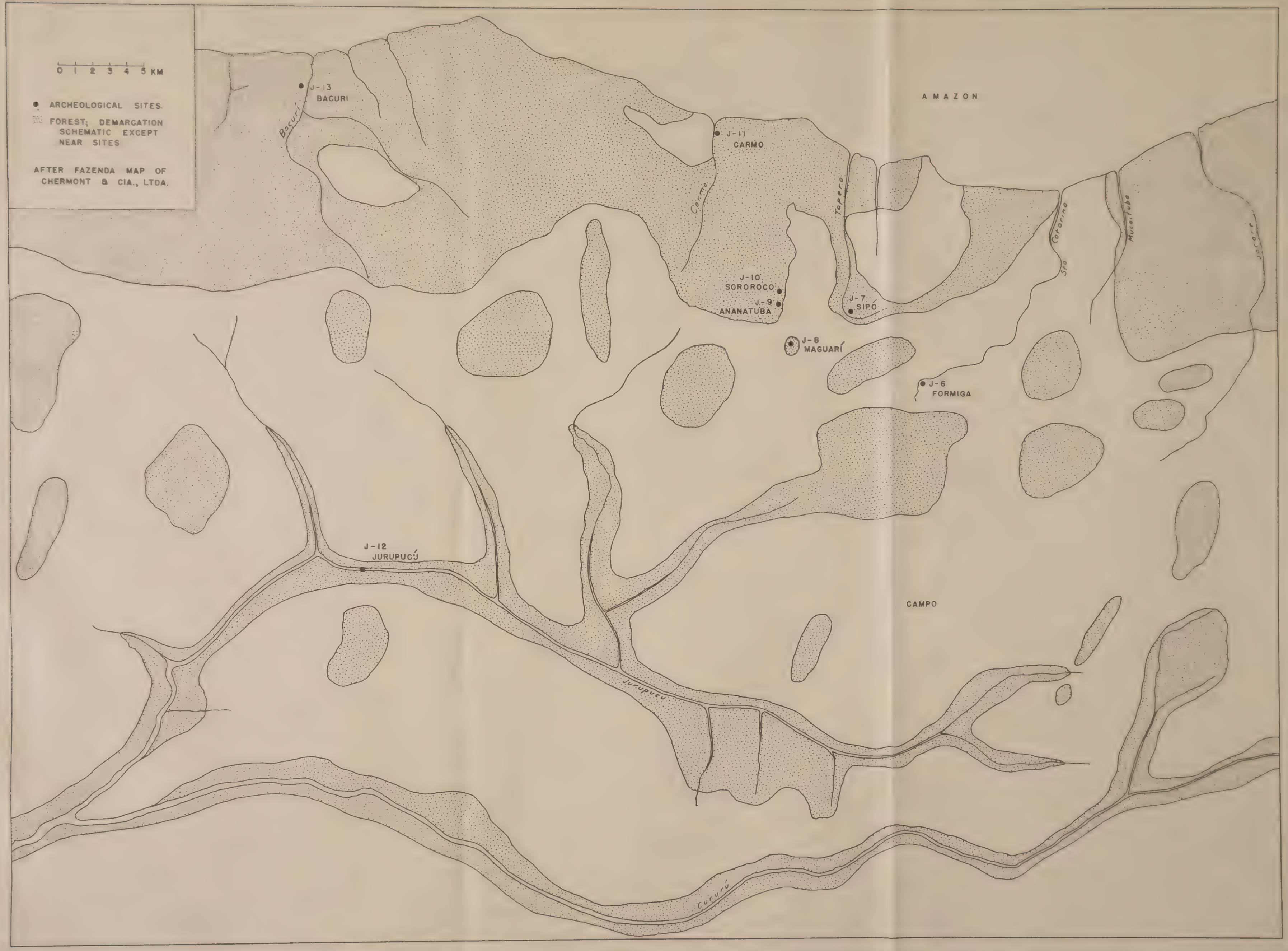
0 1 2 3 4 5 KM
ARCHEOLOGICAL SITES.
FOREST; DEMARCATION SCHEMATIC EXCEPT NEAR SITES
AFTER FAZENDA MAP OF CHERMONT & CIA., LTDA.
J-13
BACURI
Bacurí
AMAZON
J-11
CARMO
Carmo
Topera
Catarina
Sta
Mucaituba
Jacaré
J-10
SOROROCO
J-9
ANANATUBA
J-7
SIPÓ
J-8
MAGUARÍ
J-6
FORMIGA
J-12
JURUPUCÚ
Jurupucu
CAMPO
Cururú

FIGURE 48.—North coast of Marajó Island, showing vegetation pattern and the location of sites J–6 through J–13.

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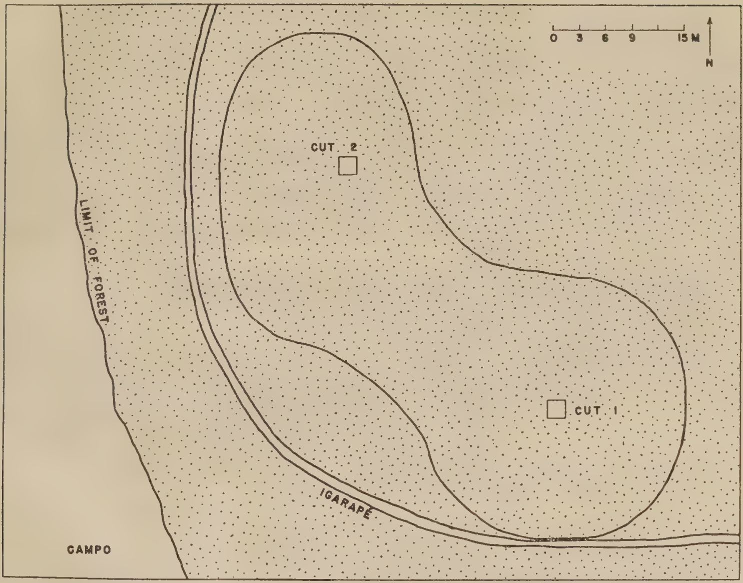

FIGURE 49.—Plan of J–7—Sipó, a habitation site of the Ananatuba Phase.

The existing height of 75 cm. represents the accumulation of refuse during occupation. Finely broken sherds were heavily concentrated on the northwest rise and scattered over the rest of the surface. The forest growth, which extends along both banks of the *igarapè*, covers the site, but is sparser there than in the surrounding area. The largest tree was some 60 cm. in diameter, and the undergrowth included spine bushes and cane (pl. 30, *a*). An impression left by an excavation made 18 years prior to our visit was still distinct. The edge of the *campo* lay about 15 meters away, on the opposite side of the *igarapé*.

Two stratigraphic tests were made: cut 1 in the center of the southeastern end and cut 2 near the center of the northwestern rise. Both were 2 by 2 meters square and carried down by 15-cm. levels into sterile soil. Cut 1 produced black loamy soil in the first two levels, becoming gray brown at 30 cm. and light gray below 45 cm. Sterile, water-deposited sand was encountered at 52 cm. and continued to 80 cm., the greatest depth tested. Hard conglomerate lumps of clay, often cemented to each other or to the sherds, appeared in the northeast corner of the cut below 30 cm. and continued to the bottom. The following cultural remains were recovered:

Level .00–.15 m.: 1,198 sherds, 8 clay lumps (6 burnt red).
Level .15–.30 m.: 1,016 sherds, 22 clay lumps (2 burnt; the remainder conglomerate of charcoal, bone, and clay).

Level .30–.45 m.: 609 sherds and 18 clay lumps (10 burnt, 8 conglomerate).
Level .45–.60 m.: 144 sherds, 11 clay lumps (4 burnt, 7 conglomerate).

In cut 2, the black loamy soil continued to a depth of 56–58 cm., where it changed suddenly to light tan because of sand mixture.[15] Sherds were thickly concentrated in the sandy soil at this point of transition. The sandy mixture, containing greenish concretions and bone scraps in addition to sherds, continued to 80 cm., where it gave way to sterile, water-deposited sand containing many conglomerate lumps. The cut produced:

Level .00–.15 m.: 608 sherds, 3 clay lumps (1 burnt).
Level .15–.30 m.: 649 sherds, 1 concretion.
Level .30–.45 m.: 986 sherds, 1 clay lump.
Level .45–.60 m.: 2,604 sherds, one reworked sherd 4.5 cm. diameter incompletely perforated slightly off center (fig. 50; pl. 42, *d*), 6 clay lumps (3 burnt, 1 with parallel depressions as if pressed against branches).
Level .60–.75 m.: 1,730 sherds and 10 clay lumps (2 burnt).
Level .75–.90 m.: 226 sherds, 8 clay lumps.

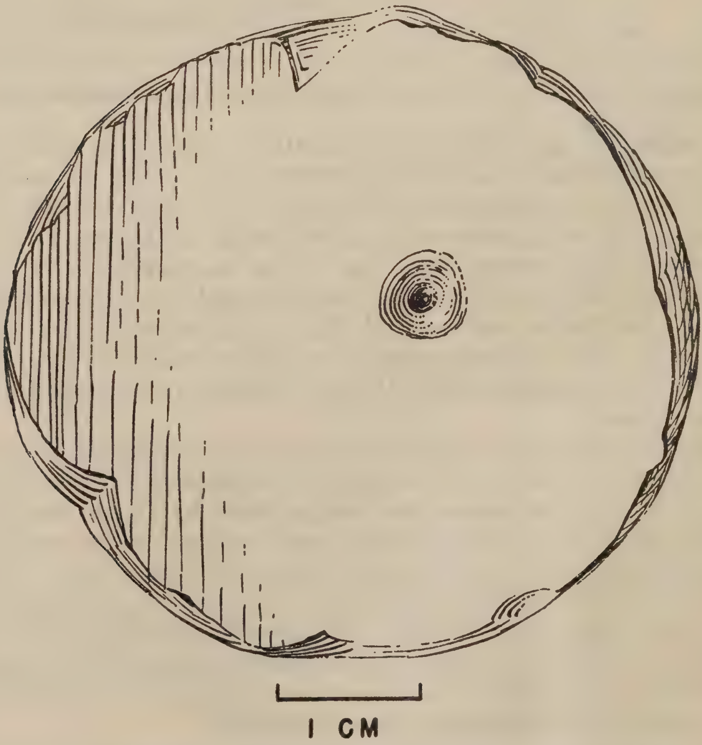

FIGURE 50.—Partially drilled sherd from J–7—Sipó, Ananatuba Phase.

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[15] This stratigraphic division between sandy soil and black loam corresponds to a cultural division, the intrusion of Mangueiras Phase ceramics.

SITE J–8—MAGUARÍ

This small habitation site is 3.5 km. southwest of J–7, in a clump of trees about 100 meters in diameter surrounded by open *campo* (fig. 48). A barely perceptible elevation above the surrounding area prevents this spot from being inundated during the wet season and permits the growth of trees. The underbrush is thin, as at J–7, and the trees are with a few exceptions 35 cm. or less in diameter. The soil is hard, gray clay.

In a cut 1.5 by 1.5 meters, begun in the east half of the site, the sherds were found to be sparse, small, and in a poor state of preservation. Since the deposit was less than 15 cm. deep, the cut was widened into a test trench to increase the sherd sample. A few small sherds were scattered on the surface. Only 127 sherds and 15 burnt clay lumps were collected.

SITE J–9—ANANATUBA

An extensive stretch of forest, part of the coastal fringe, begins 1 km. northwest of J–8 (fig. 48). Just inside its limits is a habitation site, which sherds on the surface reveal to be roughly circular and about 20 meters in diameter. The tree growth on this spot is sparse in contrast to the heavy vegetation in the adjacent area, and the soil is black instead of light gray. The surface of the site has an elevation of about 50 cm. above the surrounding terrain, resulting from the deposition of refuse.

A surface collection was made, and a cut 2 by 2 meters was excavated in 15-cm. levels near the center of the site. The soil was black, sandy loam containing hard, irregularly shaped concretions, sometimes cemented to sherds, which were extremely abundant and relatively large. Sterile gray-brown sand was reached at 50 cm. and white sand, also sterile, at 60 cm. This cut produced:

Level .00–.15 m.: 1,465 sherds, 60 clay lumps (a few burnt, but most hard, black clay concretions with orange flecks), and 1 broken conical pottery object (A).
Level .15–.30 m.: 1,419 sherds, 30 clay lumps (like the preceding level), and 1 small cylindrical pottery object (B).
Level .30–.45 m.: 1,360 sherds, 25 clay lumps and a cylindrical pottery object (C).
Level .45–.60 m.: 352 sherds and 10 clay lumps.

Cylindrical clay objects.—Three small conical to cylindrical objects made of pottery were recovered from successive levels of cut 1. All are Ananatuba Plain pottery, solid, circular in cross section and show no wear.

Object A (fig. 51, *a*) has a flat end and sides that constrict slightly toward the opposite end, which is broken off. Maximum diameter 1.7 cm., existing length 2.4 cm.

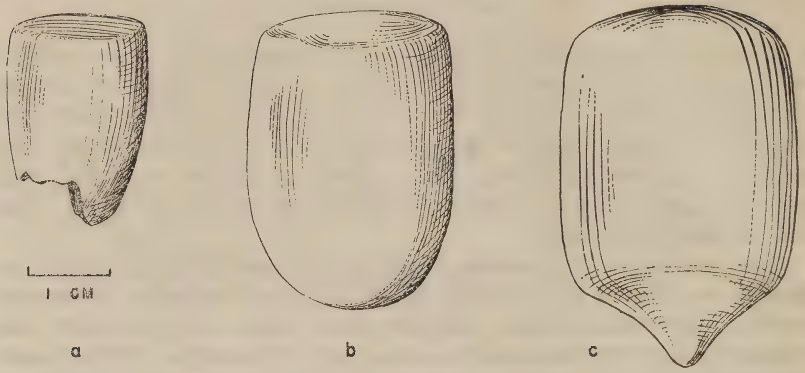

FIGURE 51.—Cylindrical pottery objects from J–9—Ananatuba, Ananatuba Phase.

Object B (fig. 51, *b*) is cylindrical, rounding to flattened ends. Diameter 2.4 cm., length 3.3 cm.

Object C (fig. 51, *c*) resembles Object B but has a nubbinlike rounded tip at one end. Diameter 2.7 cm., length 4.3 cm.

SITE J–10—SOROROCO

Another village site is 500 meters north of J–9, inside the edge of the same stretch of forest. It is a low mound, measuring 50 meters north-south and 10 meters east-west, with a small elevation in the center 5 meters in diameter and 75 cm. above the rest of the mound. The surface is thickly covered with *sororoco*, a spiny palm.

A cut 1.5 by 1.5 meters, controlled in 15-cm. levels, was excavated just south of the central elevation. Scattered sherds were encountered in the first 5 cm., corresponding to the humus layer. Beneath this were 25 cm. of sterile sand. At 30 cm., there was a sudden transition to black loam containing sherds and conglomerate concretions, the two sometimes cemented together. This condition continued to the bottom of the cut, the concretions becoming more abundant until at 80 cm. they formed a cementlike deposit that had to be broken with a pick, but which had sherds embedded in it. A small, complete Ananatuba Plain jar (pl. 42, *a*), 14 cm. tall and 11 cm. in body diameter, with a direct rim 6 cm. in diameter, curved walls and a pointed bottom was found at 55 cm. Gray sand was encountered at 1.00 meter and white sand streaked with orange at 1.05 meters. Both sands were sterile, lacking concretions as well as sherds.

A test was made in the central elevation and it was found to be caused by a thicker deposition of sand just below the humus layer. Since conditions below that level corresponded to those in the cut, the sherds from the two excavations were combined, giving the following totals:

Level .00–.15 m.: 68 sherds, 2 clay lumps.
Level .15–.30 m.: sterile.
Level .30–.45 m.: 530 sherds, 16 clay lumps (3 burnt).
Level .45–.60 m.: 498 sherds, 15 clay lumps (4 burnt).
Level .60–.75 m.: 807 sherds, 26 clay lumps (concretions).
Level .75–.90 m.: 450 sherds.
Level .90–1.05 m.: 247 sherds, 1 burnt-clay lump.

The deposit of sterile sand overlaying the habitation remains indicates the possibility that this site was abandoned as the result of a severe flood. Inquiries made as to the closest watercourse brought the information that the only *igarapé* in the vicinity is now about 1.5 km. to the south. In view of the evidence of waterborne sand on the site and of the known impermanent nature of *igarapé* beds, it can be safely assumed that this stream has changed its course since Ananatuba Phase times.

Data From Other Investigations

The only additional information on the Ananatuba Phase comes from surface collections made by Peter Hilbert at two sites in central Marajó, included in the site numbering as J–19 and J–20 (fig. 47). Although only one sample is large enough to be used for seriation, these data are important because they extend the known distribution of the Phase inland from the north coast toward the center of Marajó Island.

SITE J–19

An Ananatuba Phase village site, J–19, is located 2 km. inland from the left bank of the Rio Anajás-mirí, 4 km. above its junction with the Rio Ararí. A surface collection sent to us for classification contained 75 sherds, of which 54.6 percent were Ananatuba Plain, 41.4 percent Sororoco Plain, and 4 percent Sipó Incised. Seriation places this site contemporary with J–10 (fig. 56).

SITE J–20

On the upper Rio Camutins, just above the last of the Marajoara Phase mounds on that stream is an Ananatuba Phase village site (J–20). The surface collection contains only 23 sherds, of which 11 are Sipó Incised, 7 Ananatuba Plain, and 5 Sororoco Plain.

Analysis of Materials of the Ananatuba Phase

Pottery Type Descriptions

The pottery type classifications are based on the analysis of 13,843 sherds of the Ananatuba Phase. The detailed descriptions are arranged in alphabetical order.

ANANATUBA PAINTED

PASTE: On Ananatuba Plain; see that pottery type description for details of temper, firing, color, etc.

SURFACE: The surfaces are treated like those of Ananatuba Plain with the exception that the painted sherds are always well smoothed and usually given a white slip on the surface to be painted.

FORM:

Rim: Generally direct with a square or rounded lip; occasionally the rim expands to a slightly rounded lip. Rim is rarely exteriorly thickened.

Body wall thickness: 5–12 mm.; majority 8 mm.

Bases: None found with paint; probably rounded as is typical of Ananatuba Plain.

Common vessel shapes reconstructed from sherds:

1. Shallow to rounded bowls with direct rim and flat or rounded lip. Mouth diameter 14–36 cm. Painted in any of the variations listed under "decoration" (fig. 52–1).
2. Bowls with rounded body. Wall thickness gradually increases 1–2 cm. below the rim giving it a thickness 2–5 mm. greater than that of the lower body wall. Mouth diameter 24–32 cm. Paint on the rim top, carried over to the upper exterior wall on one (fig. 52–2).

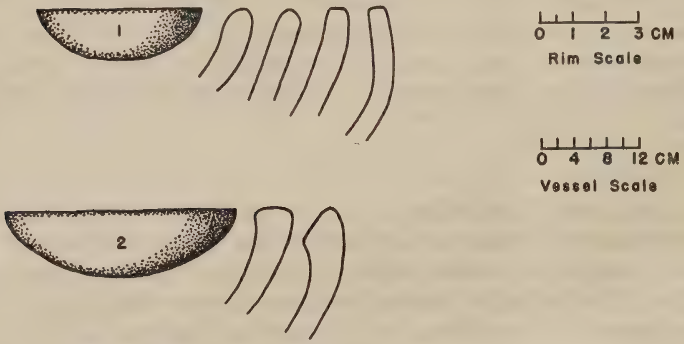

FIGURE 52.—Rim profiles and vessel shapes of Ananatuba Painted, Ananatuba Phase (Appendix, table 24).

Rare vessel shapes:

1. Bowls with rounded carination and slightly everted rim with a rounded lip. Rim diameter 24 cm. Paint is a horizontal stripe on the interior of the body.
2. Jars with globular body, constricted mouth and exteriorly thickened rim. Mouth diameter 30 cm. Paint on exterior of rim.

DECORATION:

Technique: Bright red coloring is applied in a paper-thick coat to the slipped or well-smoothed surface.

Motif: The paint was applied in the following variations:

Solid areas:

Rim top only—6 sherds.
Rim top and upper exterior—1 sherd.
Rim top and interior—4 sherds.
Interior—5 sherds from body of vessels.

Patterns:

Diagonal stripes of varying width—2 sherds, 1 on the exterior, and 1 on the interior.

Horizontal stripe 1–2 cm. wide on the interior wall—10 sherds.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None (Appendix, table 24).

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Ananatuba Phase, but never exceeding a fraction of a percent in frequency.

ANANATUBA PLAIN

PASTE:

Method of manufacture: Coiling, coils 1.5–2.5 cm. wide.

Temper: Ground sherd with most of the particles small, under 2 mm.

Texture: Good mixture of clay and temper particles, well-kneaded into a compact mass. Pinhole air pockets frequent from air bubbles in the wet, moist clay during manufacture. Good tensile strength, broken edge very rough and angular. Good clear ring when knocked together. A sharp line often distinguishable between the floated surface and the core.

Color: A gray core with thin (0.5–1.0 mm.) tan to white-tan bands on both surfaces in 85 percent of the sherds. Light-tan core in the remainder. Lighter particles of ground sherd temper often speckle the gray core. Black specks are sometimes present.

Firing: Incomplete, oxidized firing; 25 percent of sherds have fire clouds.

SURFACE:

Color: Exterior and interior—On 75 percent of the sherds the exterior and interior range from light, dull tan to a tannish white to a cream to a grayish white. On the remainder, the interior is light gray and the exterior one of the above-mentioned shades. Erosion of surfaces and exposure of the light-gray core gives many sherds a false gray surface color.

Treatment: There is no absolute correlation between the exterior and interior but sherds well polished or better smoothed on one surface are often better smoothed than usual on the other surface also. Exceptions are probably from large bowls or jars where one surface was emphasized. The surface treatment ranges from irregular, uneven surfaces with only hand smoothing to scraped or smoothed surfaces with smoothing tracks to well-floated, semipolished surfaces with a velvety feel. Floating blends into slipping, which is unmistakable on some sherds as an added layer in cross section. Condition of preservation of sherd surfaces closely correlates with the degree of smoothing; otherwise the whole surface is badly pitted and often gone.

Hardness: Soft and easily scratched with the fingernail; 2.5.

FORM:

Rim: Direct, exteriorly thickened, or everted with rounded or flat lip (pl. 35).

Body wall thicknsss: 5–13 mm.; majority 8 mm. Well-smoothed sherds range from 5–9 mm.

Body diameter: 20–50 cm. except for a few miniature vessels.

Base: Rounded and unthickened on bowls; slightly thickened and more pointed on jars.

Common vessel shapes reconstructed from sherds:

1. Globular-bodied jars with constricted mouth, direct rim, rounded or flattened lip. Mouth diameter range 8–34 cm.; majority 12–26 cm. Occasional exterior thickening just above the maximum diameter produces an angular shoulder (fig. 53–1).

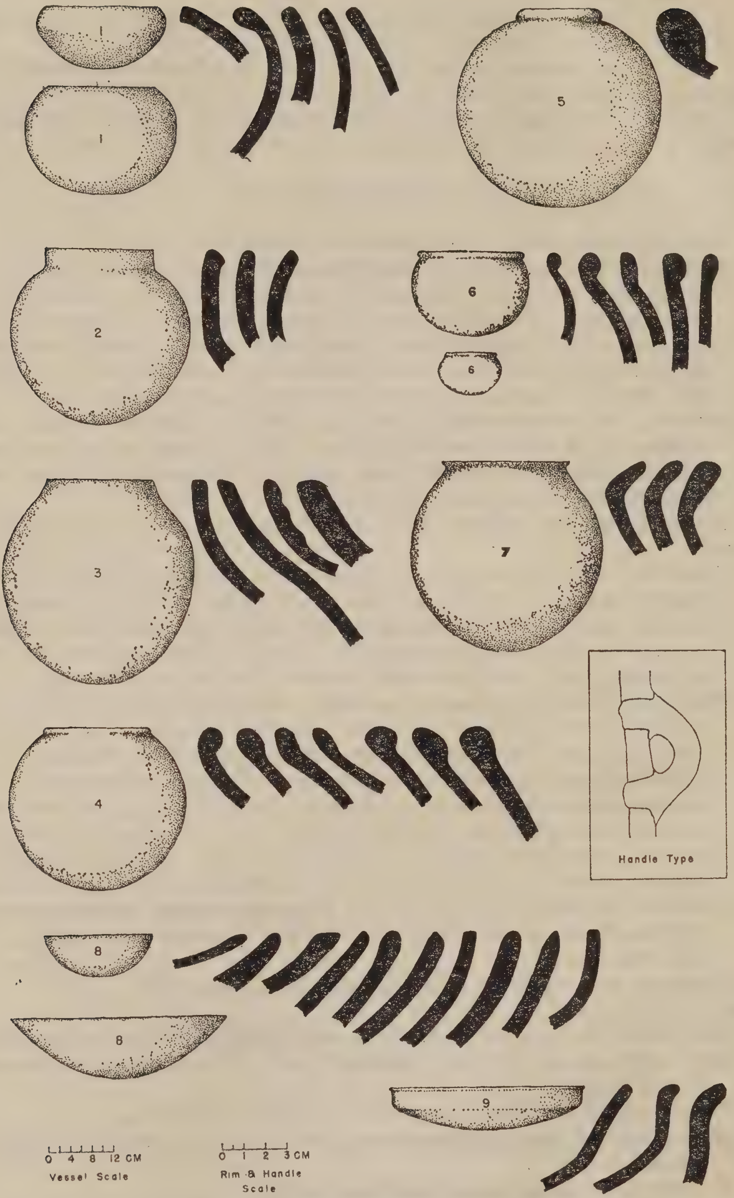
1
1
5
2
6
6
3
7
4
Handle Type
8
8
9
0 4 8 12 CM
Vessel Scale
0 1 2 3 CM
Rim & Handle Scale

FIGURE 53.—Rim profiles and vessel shapes of Ananatuba Plain and Sororoco Plain, Ananatuba Phase (Appendix, tables 23 and 26).

2. Jars with globular body, short vertical or slightly everted neck, direct rim with rounded or flattened lip. Rim diameter range 8–40 cm.; majority 10–22 cm (fig. 53–2).
3. Jars with rounded body, upper walls insloping to direct rim with flattened lip. Rim diameter 14–36 cm. Three to four unsmoothed coils sometimes ornament the exterior just below the rim (fig. 53–3).
4. Globular-bodied jars with constricted mouth and exteriorly thickened rim with a rounded lip. Mouth diameter 12–26. Rim cross section is 1.5 cm. thick or less (fig. 53–4).
5. Globular-bodied jars with constricted mouth and heavy, exteriorly thickened rim and rounded lip. The cross section of the rim is more than 1.5 cm. in thickness. Mouth diameter 12–20 cm. (fig. 53–5).
6. Wide-mouthed jars with rounded body, exteriorly thickened rim and rounded lip. Maximum body diameter not more than 4 cm. greater than the exterior rim diameter. Rim diameter 8–36 cm. (fig. 53–6).
7. Globular-bodied jars with a collarlike, everted rim and rounded lip. Rim diameter 16–30 cm. (fig. 53–7).
8. Bowls with rounded bottom, walls curving outward or upward to a direct rim with rounded, flattened or pointed lip. Rim diameter 20–40 cm.; depth 6–15 cm. (fig. 53–8).
9. Bowls with rounded bottom, sides curving outward then upward to an everted rim with rounded or flattened lip. Rim diameter 16–36 cm.; depth 5–9 cm. (fig. 53–9).

Rare vessel shapes:

1. Miniature vessels: 1 percent of the sherds are from miniature jars (pl. 42, *a*) and bowls usually 4–5 cm. in diameter and 5–10 cm. high with the typical vessel shapes and rim forms of the type.

Appendages: Loop-shaped handles with an oval cross section (1.3 by 1.8 cm. ranging to 2.0 by 3.5 cm.) are made as a separate unit with a round extension at each end and attached vertically to the vessel wall by punching two holes for the plug insert (fig. 53; pl. 35). Edges then smoothed over, but the method of construction is clearly visible in cross section. The loop handles range from 5–10 cm. in length and project 3–6 cm. from the body wall.

TEMPORAL DIFFERENCES WITHIN THE TYPE:

Specks of black ash are abundant in the paste of about 50 percent of the sherds from J–7, cut 2, levels 30–45 cm., 45–60 cm., and 60–75 cm., and in one sherd from J–10, cut 1, level 90–105 cm. (lowest level). Microscopic examination suggests that this is a natural characteristic of the local clay, which would explain its occurrence in the pottery from only one site. The sherd from J–10 may be from a vessel taken from the old village of J–7 to the new one.

A few temporal differences can be discerned in the frequency of vessel shapes. Jars of shape 7 are restricted to the earliest site. Shapes 1, 4, and 9 show a slight decline in frequency, while shape 8 is on the increase (Appendix, table 23).

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Ananatuba Phase as the most abundant type, but shows a decrease in frequency from the early to late part of the sequence.

CARMO BRUSHED

Paste and surface: On Ananatuba Plain with a small minority on Sororoco Plain; see those pottery type descriptions for details of temper, firing, color, etc.

Form:

Rim: Majority thickened on the exterior with a rounded lip; a few direct, with rounded or angular lip.

Body wall thickness: 7–9 mm., majority 8 mm.

Base: Rounded with slight thickening at the center on the interior.

Common vessel shapes reconstructed from sherds:

1. Jars with large, globular body, 32–36 cm. in diameter, with a constricted mouth and exteriorly thickened rim. Mouth diameter is 23–34 cm. (fig. 54–1).

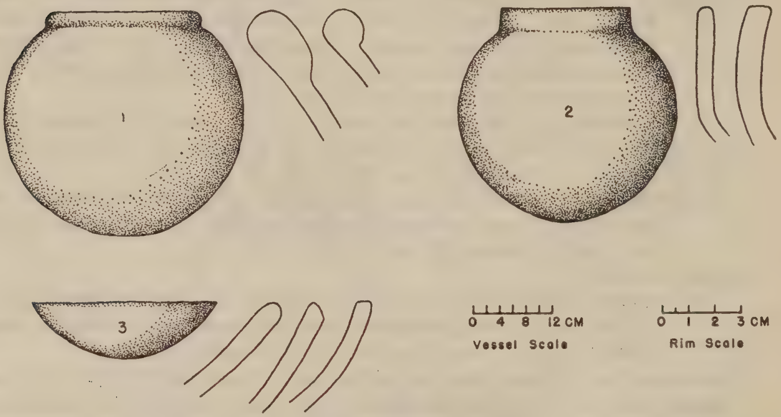

Figure 54.—Rim profiles and vessel shapes of Carmo Brushed, Ananatuba Phase (Appendix, table 24).

2. Jars with globular body, short vertical or slightly insloping neck, 4 cm. high, and a direct rim with rounded or flattened lip. Body diameter ranges 32–36 cm.; rim diameter 13–22 cm. (fig. 54–2).
3. Shallow bowls with rounded bottom, outsloping sides, direct rim and rounded or flattened lip. Rim diameter 14–38 cm., majority 26–34 cm. (fig. 54–3).

Rare vessel shapes:

1. Deep bowls with vertical or slightly insloping sides and exteriorly thickened rim. Rim diameter 16–18 cm.

Decoration (pl. 36):

Technique: Lines not evenly spaced or regularly parallel, indicating that the tool was an irregular bunch of twigs. Spacing 0.5–4.0 mm. apart, depth 0.5–2.0 mm.

Motif: Parallel brushings on the exterior, executed horizontally, diagonally or vertically to the rim. The horizontal variety is typical of bowls while the vertical or diagonal type is most often found on jars. Brushing extends over the entire body, including the base. A minority of the sherds were brushed twice in different directions, giving a criss-cross pattern.

Temporal differences within the type: Criss-cross brushing occurs at J–9 and J–10 but is absent at J–7. Vessel shape 1 declines and shape 3 increases in popularity throughout the Ananatuba Phase sequence (Appendix, table 24).

Chronological position of the type: Carmo Brushed is present throughout the Ananatuba Phase, expanding in popularity toward the middle of the sequence.

SIPÓ INCISED

Paste and surface: On Ananatuba Plain except that the surfaces of this incised type are somewhat better finished and always smooth. See the type description of Ananatuba Plain for details of temper, firing, color, etc.

Form:

Rim: Majority direct with rounded or angular lip, some with exterior thickening and rounded lip.

Body wall thickness: 6–10 mm., majority 8 mm.

Base: Body wall curvature on the incised sherds and Ananatuba Plain sherds indicate the base was rounded, but no base sherds are included in Sipó Incised since the decoration was limited to the upper body.

Common vessel shapes reconstructed from sherds:

1. Jars with globular body, walls incurving to a direct rim with a rounded or flat lip. Mouth diameters range from 22–28 cm. at Site J–7, from 16–25 cm. at Site J–10. Body diameter is 26–29 cm. (fig. 55–1).
2. Jars with globular body, walls incurving to an exteriorly thickened rim with a rounded lip. Rim diameter 14–28 cm. (fig. 55–2).
3. Jars with short, vertical or insloping necks and direct rim with rounded lip. Rim diameter ranges 18–34 cm., majority 18–28 cm. (fig. 55–3).
4. Deep bowls with outcurving sides, direct rim and rounded or flattened lip. Rim diameter 12–28 cm. (fig. 55–4).

Rare vessel shapes:

1. Bowl with sloping side walls joining rounded base at a pronounced angle. Mouth diameter 34 cm., body diameter at angle 25 cm., vertical height above angle 6.5 cm., estimated total height 10 cm.
2. Bowls with outcurving sides and everted, flat-topped rim with rounded or pointed lip. Diameter 12–16 cm.
3. Jars of common shape 2 but with a very heavy, exteriorly thickened rim. Rim diameter 14–34 cm.

Decoration:

Technique: Band of incision applied on the upper exterior surface between the maximum diameter of the vessel and the rim edge. Lines are typically cleanly made, U-shaped cuts, done with a blunt, round-ended tool when the surface of the clay was leather hard. Majority of incisions are 1.5 to 3.0 mm. wide and 0.5 to 1.0 mm. deep. Some of the motifs combine this type of line with fine crosshatching made with a sharp-pointed tool leaving a mark about the width of a fine pencil line. Although the total effect of the designs is pleasing and suggests regularity, close examination reveals the lines to be somewhat unevenly applied, with overlapping strokes and unequal spacing.

Motifs: The designs can be classified under 7 major types:

1. Inverted scallops just below the lip (pl. 37). The width of the scallop is generally uniform on a single vessel, but has a range of

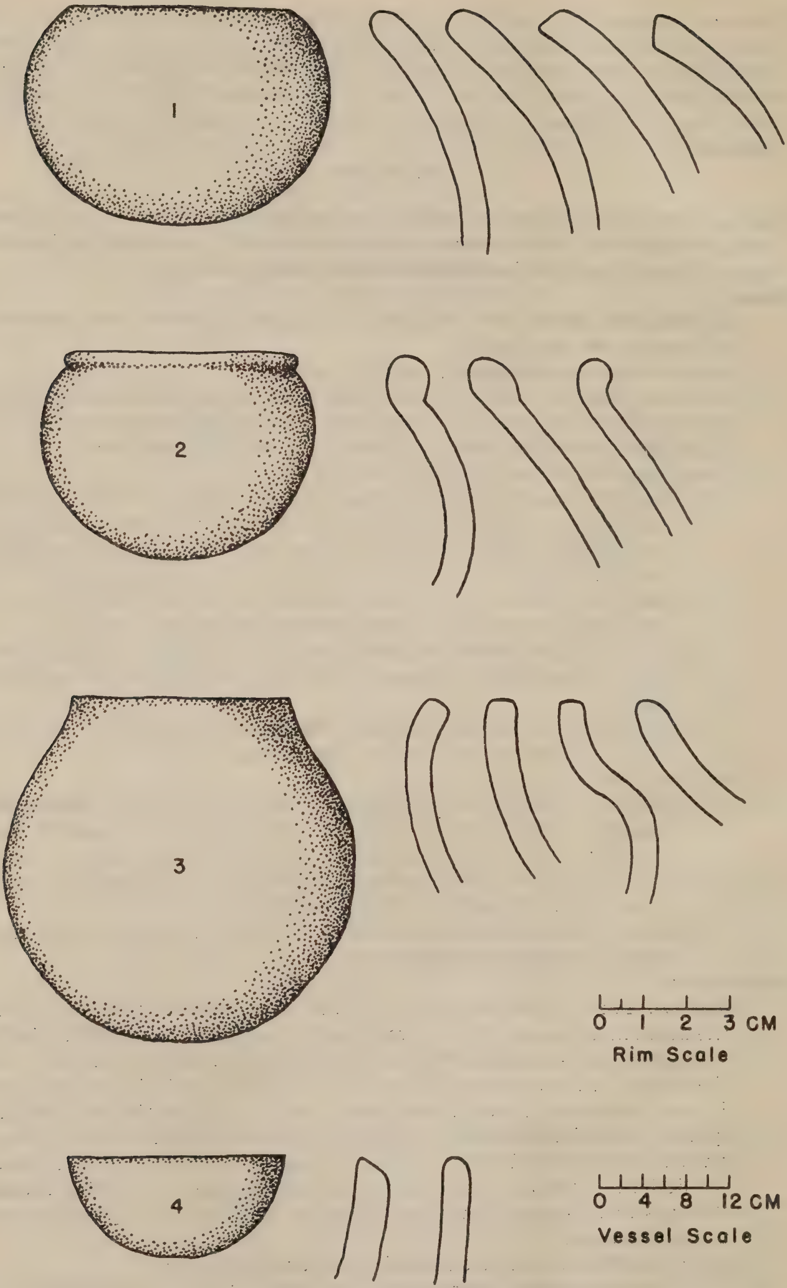
1
2
3
4
0 1 2 3 CM
Rim Scale
0 4 8 12 CM
Vessel Scale

FIGURE 55.—Rim profiles and vessel shapes of Sipó Incised, Ananatuba Phase (Appendix, table 25).

variation within the type of 1–3 cm. The typical arrangement is a single row placed 0.5–1.5 cm. below the rim edge. The area immediately below is occasionally covered with parallel, diagonally incised lines.

2. Zoned, fine crosshatch (pl. 38). Irregularly shaped areas of fine crosshatch with straight, stepped or scalloped boundaries are defined by broad incised lines. These are alternately left blank and filled with fine crosshatching, done with short strokes so that the lines overlap. The design occupies a band around the shoulder of the vessel and is set off at the upper and lower edge by a horizontally incised line, the upper one being about 1 cm. below the rim edge.
3. Zoned, large crosshatch (pl. 39, *a–b*). Similar to type 2 but with the crosshatching composed of broad incised lines like those used to outline the zones.
4. Diagonal crosshatch, unzoned (pl. 39, *c–e*). A band of lines incised diagonally in one direction around the vessel circumference and crossed by a similar number of lines running diagonally in the opposite direction. The area they occupy may or may not be bounded above and below by a horizontally incised line.
5. Zoned parallel lines (pl. 40). Zones of incised parallel lines, usually stepped, alternating with unincised zones. The band they occupy on the upper part of the vessel is demarcated by horizontal incised lines at the upper and lower limits.
6. Unusually broad, parallel lines (pl. 41, *a–d*). Parallel lines assuming the appearance more of shallow scraping than true clearcut incision. The motifs are dominantly rectilinear, often triangular.
7. Row of circles along the rim (pl. 41, *e*). Small, somewhat uneven and irregularly spaced circles in a row along the rim edge. This variety is rare, represented on only 2 sherds.

TEMPORAL DIFFERENCES WITHIN THE TYPE: All of the design types are present only at J–7, where the execution is also the best. Types 4 and 7 are absent at J–10; types 1 and 7 are absent at J–9. Only types 5 and 6 are represented at J–8, possibly because of the small sherd sample from that site. No trends are evident in vessel shape (Appendix, table 25).

CHRONOLOGICAL POSITION OF THE TYPE: Present through the Ananatuba Phase with a slight increase in frequency.

SOROROCO PLAIN

PASTE:

Method of manufacture: Coiling; coils range from 1.5–2.5 cm. wide.

Temper: Ground sherd with most of the particles small to moderate in size; no hunks.

Texture: Good mixture of clay and temper particles giving a well-kneaded compact mass. Sherds hard to break and leave an irregular, angular edge. All sherds have a clear ring when knocked together.

Color: Orange-tan to pinkish-orange core in 25 percent of the sherds. Others have a thin (0.5–1.0 mm.), pinkish-orange band on both surfaces with a uniform, light-gray core. Lighter-colored particles of sherd temper often speckle the gray core. Some sherds are speckled with black.

Firing: Oxidized firing, more complete than in Ananatuba Plain; only a few fire clouds.

SURFACES:

Color:

Exterior—A light pinkish orange to dull, deep red, the latter color occurring on only 5 percent of the sherds.

Interior—Usually a light to dark gray. Only 5 percent of the total sherds are pinkish orange or red on both surfaces. This pottery type is easy to distinguish from Anjos Plain by the lightness and pinkishness of the orange.

Treatment: Exterior and interior—Majority are smoothed on the exterior and interior with the surfaces slightly irregular and uneven; only a few sherds (less than 1 percent) have the surfaces floated. All the surfaces tend to be badly pitted and easily eroded due to the poor surface finish.

Hardness: Easy to scratch with the fingernail; 2.5.

FORM:

Rim: Direct, exteriorly thickened or everted with a rounded or flat lip.

Body wall thickness: 5–13 mm., majority 8 mm.

Body diameters: Range from 20–50 cm.

Base: Typically rounded and unthickened; a few with slightly thickened, blunt, pointed bases.

Vessel shapes: The same range of shapes as Ananatuba Plain (fig. 53), but with different relative frequency. See type description of Ananatuba Plain (pp. 181–183) for details and the "Ceramic History of the Ananatuba Phase" (p. 191) for the discussion of forms.

TEMPORAL DIFFERENCES WITHIN THE TYPE:

Black ash particles are present in about three-fifths of the sherds from J–7, cut 2, levels 30–45 cm., 45–60 cm., and 60–75 cm.; and in about one-half of the sherds from cut 1, levels 15–30 cm., 30–45 cm., and 45–60 cm. None were noted in the samples from J–9 and J–10. Examination under a microscope indicates that this is a natural characteristic of the clay source used during the occupancy of J–7, rather than a conscious addition. Its seemingly greater abundance in Sororoco Plain as compared to Ananatuba Plain probably results from a difference of firing of the two types.

A few trends are discernible in vessel shape. Shape 7 is found exclusively in the earliest site, and shape 1 declines in frequency from early to late. Shapes 2 and 5 exhibit a sharp increase toward the end of the Ananatuba Phase sequence (Appendix, table 26).

CHRONOLOGICAL POSITION OF THE TYPE: Present at all sites and showing an increase in frequency from the early to the late part of the Ananatuba Phase sequence.

UNCLASSIFIED DECORATED

The majority of the sherds in this category are either too small or too badly eroded for classification. Those that are well preserved are either unique or too rare to warrant the creation of a separate decorated type. They represent three techniques: incising or brushing, relief, and punctation.

INCISED SHERDS:

From Site J–7—Sipó: 3 sherds with light scratches; 2 with deep grooves; 6 with indistinct designs.

From Site J–9—Ananatuba: 2 sherds with faint scratches; 1 with deep grooves made when clay was very wet; 6 with faint and irregular incised lines (possibly a crude variety of Sipó Incised); 1 with nicks along the exterior rim edge and faint incisions on the exterior.

From Site J–10—Sororoco: 3 from the same jar are ornamented with a row of broad grooves 1.5–2.0 cm. long, placed diagonally around the neck; 13 with faint or badly eroded incised designs.

From Site J–8—Maguarí: 3 with incised designs (probably Sipó Incised).

Modeled sherds:

From Site J–7—Sipó: 3 sherds with a raised ridge on the exterior that looks like an unsmoothed coil.

From Site J–9—Ananatuba: 1 sherd with a modeled knob.

From Site J–8—Maguarí: 1 sherd with pinched surface superficially resembling corrugation (pl. 42, *e*).

Punctate Sherds (pl. 42, *b–c*):

From Site J–7—Sipó: 1 sherd with a relief rib, 2.0 cm. wide and 1.6 cm. high, is covered with punctates, 2 mm. in diameter, spaced irregularly 1–4 mm. apart.

From Site J–9—Ananatuba: 2 sherds from a deep bowl with the exterior covered with horizontal rows of generally triangular punctates; 1 with 6 rows of shallow, generally oval punctates occupying a broad interior rim thickening, and with the rim and interior painted red; 1 with rows of fine, evenly spaced punctates that may have been made with a dentate tool.

Pottery Artifacts

Objects of pottery other than vessels are exceedingly rare in the Ananatuba Phase. Three small, cylindrical objects of fired clay (fig. 51) came from three successive levels at Site J–9. No wear is visible and their use is unknown. A worked sherd (pl. 42, *d;* fig. 50) came from Site J–7 and was probably a spindle whorl.

Nonceramic Artifacts

No chips, fragments, or objects of stone, bone, or shell were found at any Ananatuba Phase site, except for an occasional small iron concretion that appears to be a natural inclusion in the local soil.

CERAMIC HISTORY

The four strata cuts and the surface collections produced 13,483 sherds of Ananatuba Phase pottery types, which were analyzed by levels and seriated to give the sequence shown on the adjacent chart (fig. 56). Prior to the Mangueiras Phase intrusion in the upper levels of J–7—Sipó, the seriation gives a relatively smooth picture of ceramic change, in which the whitish-surfaced, gray-cored Ananatuba Plain declines from 93 percent of the total sherds in the lowest level at J–9—Ananatuba to 48 percent in the upper level at J–10—Sororoco. In this same period, Sororoco Plain, a pink- to orange-surfaced ware, increases from 6 percent to 49 percent (Appendix, tables 21 and 22).

The attempt was made to subdivide Ananatuba Plain into a polished or slipped and an unpolished variety. The resulting percentages gave the polished type a frequency of 5 percent at J–9, 4 percent at J–10, and 21 percent at J–7. This seems likely to be a reflection of differences in soil rather than differences in manufacture, however, when it is considered that the soil at J–9 and J–10 contained a high percentage of clay, which eroded the surfaces of the sherds at these two sites badly, whereas the sandy soil at J–7 left the surfaces well preserved. Added to this difficulty is the fact that the gradation between unpolished and polished is so gradual that it was often impossible to decide into which category a sherd should be put. Until evidence from a larger number of sites is available, it seems best to consider this variation as a more careful finishing applied to the surface of a small percentage of Ananatuba Plain vessels.

The decorated type diagnostic of this Phase is Sipó Incised, in which boldly drawn, broad, incised lines are applied to the exteriors of bowls and small jars in a variety of patterns ranging from a simple, scalloped line to a complex, zoned band. The popularity of this type grows from 0.5 percent at J–9 to between 1 percent and 3 percent at J–10 and the first occupation of J–7—Sipó. It reaches its peak during the Mangueiras Phase occupation of J–7, during which time it increases to from 8 percent to 25 percent of the total Ananatuba Phase wares. This is also the period of the greatest variety and best execution of the incised designs.

The other important decorated ware in the Ananatuba Phase is Carmo Brushed, which differs only in paste from many sherds of Croarí and Bacurí Brushed associated with the Mangueiras Phase. From an occurrence of 1 percent or less at J–9, it increases to from 4 to 6 percent in the lower levels of J–7 and continues thereafter to fluctuate between 1 percent and 4 percent until it disappears just before the end of the Ananatuba Phase.

Sherds of Ananatuba Painted occur scattered throughout the Phase in the amount of a fraction of a percent in the levels where they appear. It is possible that painting was originally present in greater frequency, but has not survived the erosion to which the surfaces of the sherds were subjected in the soil. On the existing samples, the red paint was applied either on the rim top or edge, or in parallel, diagonal, or horizontal bands on the body. Red-painted sherds occur with greatest frequency at J–7, and as in the case of polished surfaces on Ananatuba Plain, this may be a reflection of less hostile soil conditions, rather than of an actual increase in the popularity of the painted technique.

An analysis of the vessel and rim shapes characteristic of Ananatuba Plain and Sororoco Plain and calculation of their percentage frequencies reveals remarkably little change in popularity of various forms (Appendix, tables 23 and 26) in spite of the relatively long period of time that the sequence appears to represent. It is also interesting to

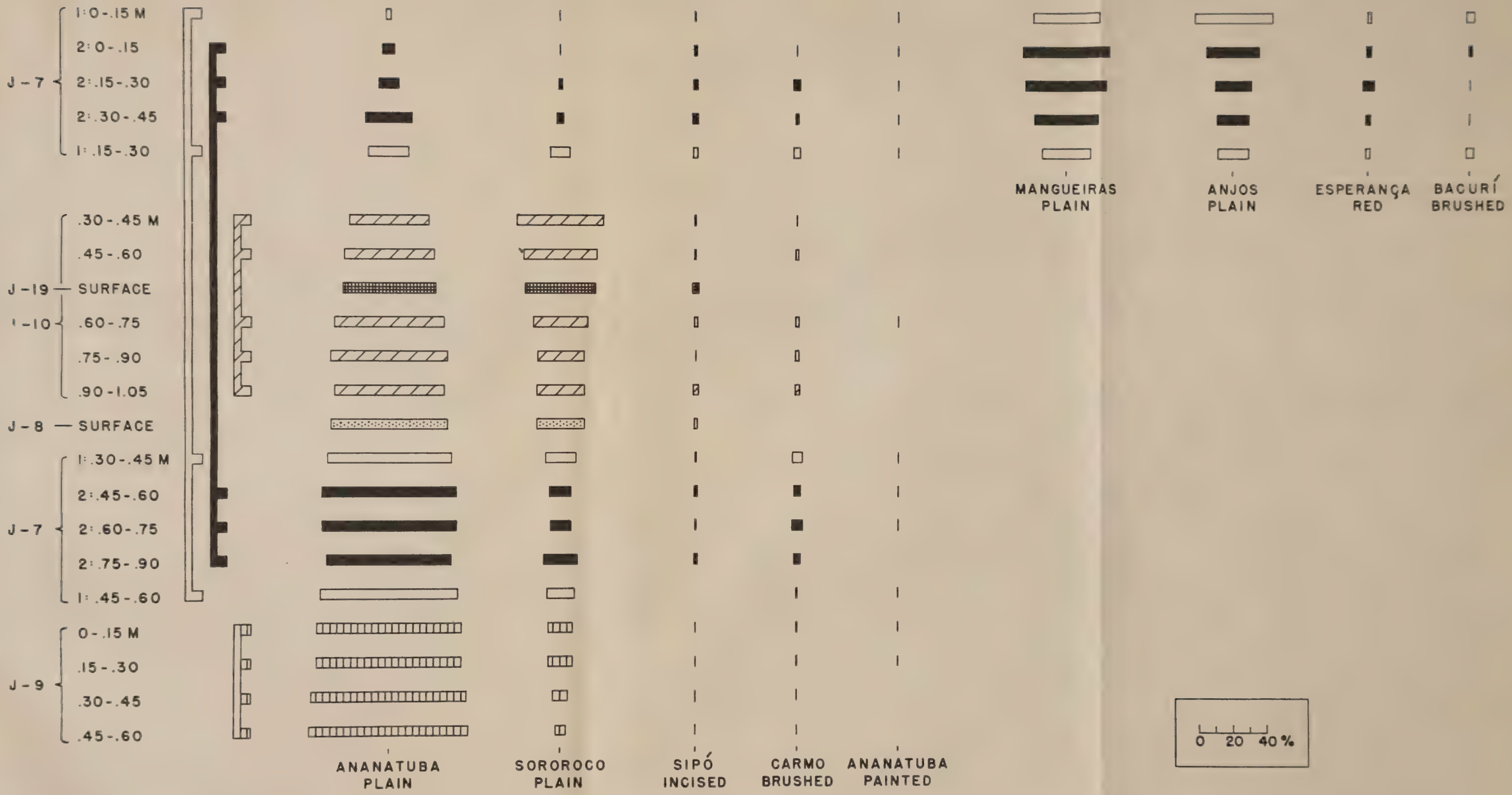

Figure 56.—Seriation of Ananatuba Phase sites on the basis of pottery type frequency (Appendix, tables 21 and 22).

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note that although there are over four times as many classifiable rims of Ananatuba Plain (1,172) as there are of Sororoco Plain (283), the same vessel forms are represented in both, and the Ananatuba Plain shapes show no more consistent or clearly defined trend than do those of Sororoco Plain.

A comparison of the ratio of bowls to jars in the two plain wares shows that 46 percent of Ananatuba Plain rims are from bowls, in contrast to 15.5 percent of Sororoco Plain rims. Since in actual numbers Ananatuba Plain jars are always more abundant than those of Sororoco Plain, the increasing frequency of Sororoco Plain reflects an increasing tendency for jars to become oxidized during firing, whereas bowls are relatively unaffected.

Of the nine vessel shapes, all are not equally abundant in both wares. Jars of shapes 2 and 5 are relatively more frequent in Sororoco Plain than in Ananatuba Plain and in fact represent the most common shapes in the former ware. As mentioned above, bowls (and particularly shapes 8 and 9) are the dominant form in Ananatuba Plain. Jar shape 6 is the only form that shows a decline in Ananatuba Plain and a corresponding increase in Sororoco Plain; other shapes appear to run about the same course in both wares and to be independent of the shift in popularity between the two wares. The only shape with marked temporal significance is jar shape 7, which occurs only at the earliest site, J–9—Ananatuba.

The site of J–7—Sipó presents two unusual features which raise special problems of interpretation: First, the upper levels cannot be seriated reliably into the Ananatuba Phase sequence because they represent a time when the culture was being subjected to strong disruptive pressures that had the effect ceramically of suppressing or selecting certain of the pottery types and thus altering the normal trend, and second, the size and shape of the site are somewhat different from the pattern exhibited by the others in the Ananatuba Phase. A closer analysis permits some interesting deductions about the history of J–7.

Two kinds of evidence are provided by the site, one from the density of the sherds in the levels and the other from the position of the levels in the pottery seriation. The arrival of the Mangueiras Phase divides both of the stratigraphic cuts in the middle. Cut 1 has 2 levels producing only Ananatuba Phase pottery and 2 with Mangueiras Phase mixture; cut 2 has 3 levels in each category. The levels in the two cuts that contain Mangueiras Phase wares produce an almost equal density of sherds in spite of the 15 cm. difference in depth of deposit. The upper two levels of cut 1 contained 2,214 sherds as against 2,243 from the upper three levels of cut 2. However, in the lower levels the sherd density is six times greater in cut 2

(4,560 sherds) than in cut 1 (753 sherds), suggesting a considerably greater intensity of habitation on Mound 2 (cut 2) during the pre-Mangueiras Phase period at J–7.

An examination of the position that the lower levels of the two cuts at J–7 occupy in the pottery type seriation (fig. 56) shows that the 3 levels of cut 2 fit between the 2 levels of cut 1. The fact that the vast majority of the sherds from this part of cut 1 come from the upper level (30–45 cm.) suggests that the major pre-Mangueiras Phase occupation of Mound 1 (cut 1) is not contemporary with that at Mound 2, but instead subsequent to it. In other words, both the sherd density and the seriation evidence indicate that the original village at J–7 was on the site of Mound 2, and that prior to the advent of the Mangueiras Phase people there was a removal or expansion to the site of Mound 1.

Mangueiras Phase wares replaced those of the Ananatuba Phase with almost the same rapidity in the two parts of the site (table D), which leads to the conclusion that the population increase brought about at this time required the reoccupation of the older part of the village in addition to the facilities of the newer part. An equal intensity of habitation is also indicated by the equality of sherd density in the two cuts during this period.

TABLE D.—*Relative frequency of Ananatuba Phase and Mangueiras Phase wares at J–7—Sipó*

Level (cm.)	Ananatuba Phase wares		Mangueiras Phase wares	
	Cut 1	Cut 2	Cut 1	Cut 2
	Percent	*Percent*	*Percent*	*Percent*
0–15	5.5	11.4	94.5	88.6
15–30	43.4	22.6	56.6	77.4
30–45	100.0	38.5	0	61.5
45–60	---	100.0	---	0

It remains to decide what the temporal relationship is between J–7 and J–10. The ceramic seriation places J–10 following the pre-Mangueiras Phase period at J–7 (fig. 56). However, the trends in vessel form of Ananatuba Plain and Sororoco Plain argue strongly for the position of J–10 preceding J–7 (Appendix, tables 23 and 26). The problem is rendered more difficult by the fact that the upper part of J–7 evades seriation in the Ananatuba Phase sequence because of the heavy Mangueiras Phase mixture and the apparent distortion of the normal ratio of frequency in the manufacture of Ananatuba Phase pottery types, particularly Sipó Incised (fig. 56). Furthermore, although the ceramic seriation separates J–7 into two parts, broken by the period of habitation of J–10, the evidence from vessel shape popularity suggests that this does not represent an abandonment of J–7. Certain vessel shapes, best represented by Sororoco Plain shapes 2 and 5, maintain nearly even strength throughout the existence of J–7 but are absent or notably rarer at J–10. If J–7 had been abandoned for J–10 and the people had later returned, they would have carried on the vessel shape tradition that had developed at J–10 rather than reverted suddenly to the tradition they had when they left J–7. The frequency of shapes 1 and 3, although fluctuating, also presents the smoothest curve when J–10 precedes J–7 rather than in the sequence indicated in the pottery type seriation.

The alternative possibilities are: (1) The pre-Mangueiras Phase period of J–7 precedes J–10, and J–7 was later reoccupied; (2) J–10 precedes J–7; (3) the two sites are partly contemporaneous. Against the first conclusion is the analysis of vessel-shape trends discussed above. The trends in pottery types seem equally to preclude the second possibility. The lower levels of J–7 have notably more Ananatuba Plain and less Sororoco Plain than is found at J–10 and fit into the seriated sequence only when placed between J–9 and J–10 (fig. 56). These contradictions can be somewhat resolved by falling back on the third possibility, namely that the two sites are partly contemporary, but this too raises difficulties. The absence of Mangueiras Phase influence at J–10 appears to rule out the existence of J–10 subsequent to the pre-Mangueiras Phase period at J–7. In view of the proximity of these two sites and the apparently continuous contact between Mangueiras Phase sites occupying the surrounding area and separated by considerably greater distances (demonstrated by the rapid diffusion of Pseudo-Sipó Incised and of certain Ananatuba Phase vessel shapes after their adoption by the Mangueiras Phase population at J–7), it is impossible to believe that J–10 could have escaped the fate that befell J–7 if it had been inhabited during this time.

Diagnostic Features of the Ananatuba Phase

Ananatuba Phase sites are typically located in the forest, close to the edge of the *campo* and well away from the coast. If there is a stream nearby, as in the case of J–7, it functions only as a source of domestic water supply and the nearest navigable *igarapé* is about 1 km. away (except at J–20). The ceramic refuse marking the extent of the former village covers an area of 300 to 770 square meters and is circular or oval in outline. The deposit is typically 0.60 to 1.00 meter in depth, with sherds abundant and intermixed with a comparatively small quantity of dirt. No cemeteries were found, nor was there any evidence to suggest the manner of disposal of the dead.

Ceramically, the Phase is identified by two undecorated wares, Ananatuba Plain, with a whitish surface and a gray core, and Sororoco Plain, differentiated by the pink-to-orange color produced by more definitely oxidized firing. Both types are present in all levels, but Sororoco Plain increases with the passage of time, providing the basis for seriation of the sites. In keeping with the domestic purpose of the ceramics, the amount of decoration is small and its execution simple. Carmo Brushed, with the surface "brushed" with a bunch of small twigs, and Sipó Incised, with simple but tastefully executed, incised designs, are the major decorated types. Both are infrequent at the earliest site (J–9), but soon attain a combined frequency of 10 to 12 percent, which remains relatively constant until late Sipó times, when there is a marked increase in the popularity of Sipó Incised.

Ananatuba Phase features of uncertain significance include the great abundance of clay lumps and concretions cementing the sherds together in the ground. Since these deposits were encountered in no other Phase, it seems probable that they are in some way related to an unidentified and exclusively Ananatuba Phase practice. A few lumps of clay bearing twig impressions may be indicative of wattle and daub in the house construction. The only ceramic artifacts were 3 small, solid lumps of fired clay, basically cylindrical in form, one of which has a small nubbin at one end; and a sherd reworked in the shape of a disk and partially drilled off center.

The duration of the Ananatuba Phase is unknown, although a clue is provided by the exceptional density and depth of the ceramic refuse (see pp. 252–253). No evidence of European contact was found, substantiating the conclusion drawn on the basis of seriation with other Phases on the Island of Marajó that it came to an end sometime before the advent of Cabral.

THE MANGUEIRAS PHASE

Description of Sites and Excavations

Sites belonging to the Mangueiras Phase have been found on the western half of the north coast of Marajó, on central Marajó and on southern Caviana (fig. 145).

SITE J–5—CROARÍ

The Rio Croarí flows into the Amazon about 8 km. west of the town of Chaves, on the north coast of Marajó. It is a continuously winding stream, wide at the mouth but narrowing quickly to about 10 meters, a width that it maintains as far as the site. Both banks are heavily forested and abound in bird life. J–5 is about 3 km. from

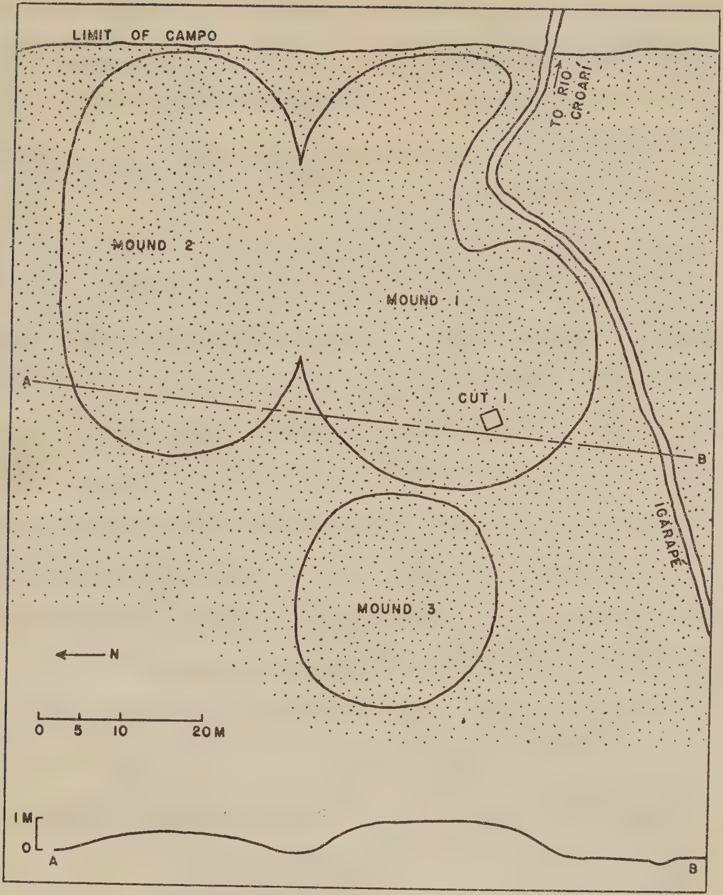

Figure 57.—Plan of J–5—Croarí, a habitation site of the Mangueiras Phase.

the mouth of the river, on the north side of a small tributary a short distance above its juncture with the main stream. A large natural clearing, one of many small patches of *campo* that break the continuity of the forest on this part of the island, begins just beyond the eastern limits. The sharp rise of 1 meter in elevation and the abundance of sherds on the surface set the site off distinctly from the natural terrain.

Three mounds of equal height compose J–5 (fig. 57). Mound 1, 34 meters in maximum width and 55 meters long, is on the bank of the *igarapé*, the bed of which has accumulated a quantity of sherds. The south side of the mound follows the contour of the stream and incorporates a small bend, giving it a somewhat comma-shaped outline. Mound 2, an oval 52 meters long and 30 meters wide, adjoins the north edge of Mound 1. Mound 3, 25 meters in diameter, is separated from the west edge of Mound 1 by a 2 meter wide depression. All of the mounds, in common with the adjacent forest, are covered with large trees. A *caboclo* house was located on Mound 2 at the time of our visit.

A stratigraphic cut 1 meter square, was begun near the west end of Mound 1 and carried down by 15 cm. levels to sterile soil. The ground was so interlaced with large roots that digging was difficult and the limits of the cut had to be reduced slightly as depth increased. In the refuse layer, the clayey soil was black and saturated with sherds for the first 30 cm. At that depth the cut passed through a charcoal-flecked layer 1 to 2 cm. thick. Below this the sherds were a little less numerous, and continued to decrease in frequency with increased depth. By level .60–.75 meters the dimensions of the cut had been reduced to 50 by 50 cm. by the presence of large roots. A second charcoal-flecked layer, the same thickness as the first, was encountered at 80 cm. and sterile, yellowish-brown clay began at 85 cm. The cut was continued to a depth of 1 meter with no change in the condition of the native soil and since this depth was below the flood level, no further testing was undertaken. The existing height of the mound, therefore, represents the accumulation of refuse during occupation rather than an intentional construction.

Cut 1 produced the following cultural materials:

Level .00–.15 m.: 393 sherds, 8 burnt clay lumps, 1 figurine head (fig. 59, *a*).
Level .15–.30 m.: 267 sherds, 16 burnt clay lumps, 1 figurine body (fig. 59, *b*), 1 short cylindrical object (fig. 60), 1 complete miniature Croarí Brushed jar (pl. 44).
Level .30–.45 m.: 187 sherds, 19 burnt clay lumps, 1 mouthpiece of a tubular pipe.
Level .45–.60 m.: 199 sherds, 8 burnt clay lumps.
Level .60–.75 m.: 253 sherds and 16 burnt clay lumps.
Level .75–.90 m.: 80 sherds and 19 burnt clay lumps.

To this material the surface collection added 485 sherds and 1 complete tubular pipe.

Pipes.—The two pipes are dark, gray-brown Mangueiras Plain. The surface of the fragment from the strata cut is well smoothed, while the complete one is somewhat rough, particularly on the inside of the bowl (fig. 58, *a*). In shape and size, the two examples are almost identical. Both have a conical bowl tapering down to a small hole (6–8 mm. in diameter) through the flattened mouthpiece. The bowl diameter of the complete specimen is 3.0 cm. and the total length 6.8 cm. The mouthpiece is oval in cross section, 2.5 by 1.2 cm. in the complete specimen and 2.6 by 0.9 cm. in the fragment.

Figurines.—Although the two figurine parts were found in successive levels, the head appears to be too small to belong with the torso.

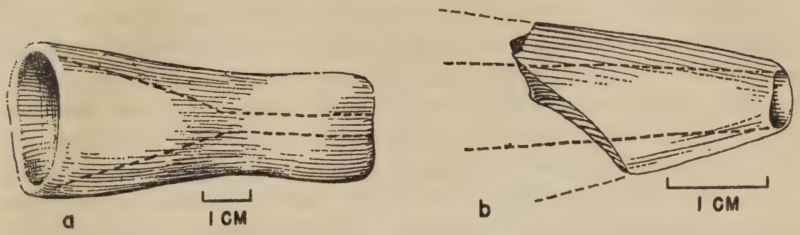

FIGURE 58.—Pottery tubular pipes from Mangueiras Phase sites: *a*, J–5—Croarí. *b*, C–3—Porto Real.

Both are Mangueiras Plain, with a light-tan, well-smoothed surface. The head (fig. 59, *a*), flat at the back and convex in front, was modeled by pressing several thin pieces of clay onto a small rounded lump. The base has a ragged break only around the edge; the central part shows the well-smoothed surface of the foundation ball, which was too dry when attached to form a strong connection with the body. A layer 4 to 5 mm. thick was laid over the core to form the face, and the eyebrows and nose are created by a small ribbon of clay that was pressed upward onto the greatest diameter of the head, fading into the surface below and creating a slight convex ridge at the top, accentuated where the two impressions meet. Secondary working of the surface produced a slight prominence in the center of the space on each side of the nose to mark the eyes. A second flat bit of clay, 2 mm. thick, was placed over the back of the head, its overlapping front edge forming the hairline at the top and sides. At each side, just above where the ears should be, there is a bun-like projection. Hair is realistically indicated by vertical scratches beginning at the hairline and extending to the base of the head. The lower part of the face is missing. Existing height is 3.5 cm., width at the two buns 4.0 cm., and thickness from front to back 2.7 cm.

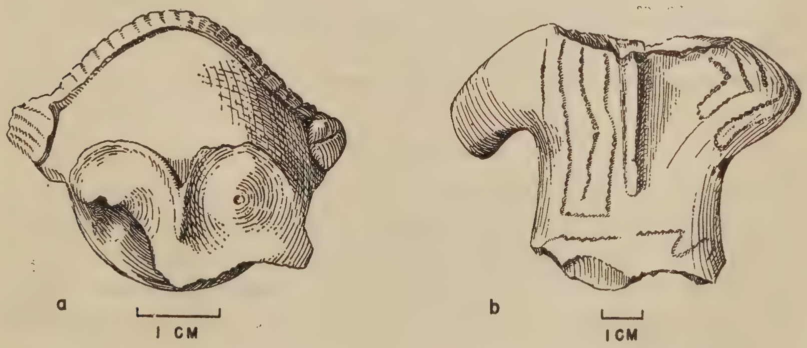

FIGURE 59.—Figurine parts from J–5—Croarí, Mangueiras Phase.

The torso (fig. 59, *b*), likewise of solid construction, is broken off at the neck and just below the waist. It has two outstretched arms, one broken off at the shoulder and the other at about the elbow. An applique ridge representing the spine runs up the back from the waist to the upper edge. There is a small depression at the navel and two slight rises on the chest. On the back and continuing over the top of the shoulders is an asymmetrical design, executed with a fine zigzag incised technique, that may signify a textile pattern or body painting. The torso is 4.5 by 4.0 cm. in diameter and 5.5 cm. in existing height.

Labret (?).—Of problematical use is a small, cylindrical object (fig. 60) with flat ends and a smooth, light-tan surface showing traces of red pigment (Esperança Red). The cross section is almost perfectly circular, 2.5 cm. in diameter. The total height is 1.7 cm. For a distance of 6 mm. from one end, the surface is slightly irregular and a little lower than that of the remaining 1.1 cm. The junction is a ragged edge, indicating that something modeled over one end has been broken off. The only clue to the function of this object is its slight resemblance to labrets from other Mangueiras Phase sites (cf. Site C–3, p. 202).

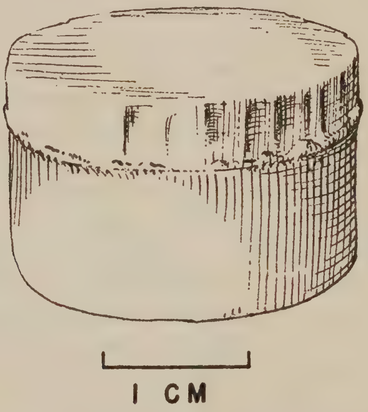

FIGURE 60.—Labret (?) fragment from J–5—Croarí, Mangueiras Phase.

SITE J–7—SIPÓ

Originally an Ananatuba Phase site, J–7, was subjected to strong Mangueiras Phase influence during the latter part of its existence. Of the 6,803 sherds from cut 2, 1,649 are Mangueiras Phase wares, and of the 2,967 from cut 1, 1,707 are Mangueiras Phase wares. Details of the site and its excavation are given under the Ananatuba Phase (pp. 174–176).

SITE J–13—BACURÍ

This habitation site is along the west side of the Igarapé Bacurí, about 3 km. from where it flows into the Amazon opposite the western tip of Mexiana (figs. 47, 61). The refuse covers a roughly oval area, 30 meters from north to south and 100 meters from east to west. From about 1 meter high at the center, it levels off gradually to the east in the direction of the *igarapé*, which is about 250 meters away. The south edge is also a gradual slope, but on the north side the elevation is abrupt. Forest covers the site and stretches away on all sides, broken by occasional small, natural clearings, but there are no large trees on the site itself (pl. 30, *b*). Small sherds are scattered over the surface and occur in abundance where the soil has been uprooted.

A stratigraphic cut 1.5 meters square and controlled in 15-cm. levels was excavated near the center, at the highest point. The soil was a loose, dark-gray, sandy loam throughout the cut, and except in the lowest two levels the sherds were very small. Light-gray clay with flecks of white was encountered at 65 cm. and although a few sherds were embedded in it, these were confined to the upper limit. Below that, the soil continued sterile for 30 cm. to the bottom of the test. Tabulation by levels gives the following counts:

Level .00–.15 m.: 190 sherds.
Level .15–.30 m.: 1091 sherds and 1 clay lump.
Level .30–.45 m.: 777 sherds.
Level .45–.60 m.: 664 sherds, 3 burnt-clay lumps.
Level .60–.75 m.: 309 sherds (1 worked).

The surface collection included 388 sherds and 1 burnt-clay lump.

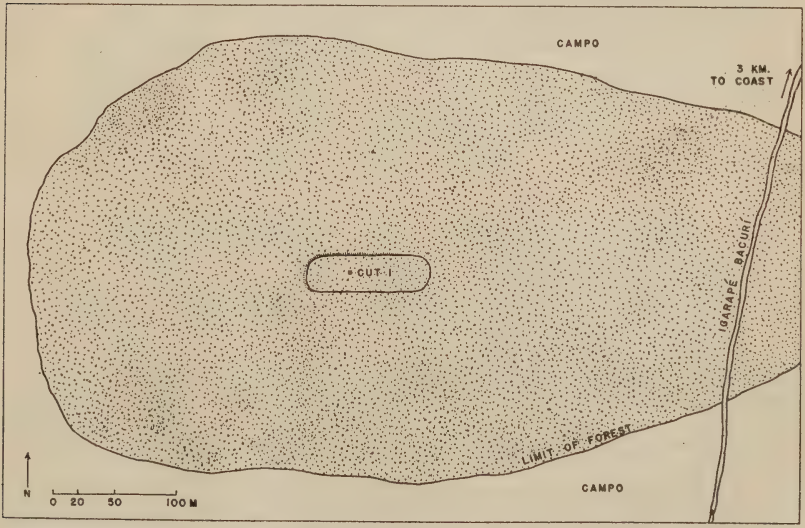

FIGURE 61.—Plan of J–13—Bacurí, a habitation site of the Mangueiras Phase.

SITE J-16—CANIVETE

J-16 is in almost the exact center of the Island of Marajó, about 250 meters from the north bank of the Igarapé Nerá, a small tributary of the upper Rio Anajás (fig. 47). This part of the island is almost equally divided between forest and *campo*, the forest tending to cover the areas where a slight elevation prevents inundation during the rainy season. Since the site was visited during the height of the rainy season, in the month of May, the reason for its location could readily be perceived. Running in a north-south direction, away from the *igarapé*, are two long stretches in which the land is 0.25 to 1.00 meter higher than the maximum water level (fig. 62). Between and surrounding these rises the land was either soft and mucky or flooded. On each of the rises, on the part closer to the *igarapé* (i. e., the southern part), there is an area with sherd refuse. The first is about 70 meters in diameter, and the second is 70 meters long and 15 meters wide. The former site, at the edge of the *campo*, produced sherds to a depth of 20 to 25 cm., while in the latter the refuse layer was only 5 cm. thick. The *campo* at this time of the year was covered by a few centimeters to several meters of water, giving the appearance of a marshy lake.

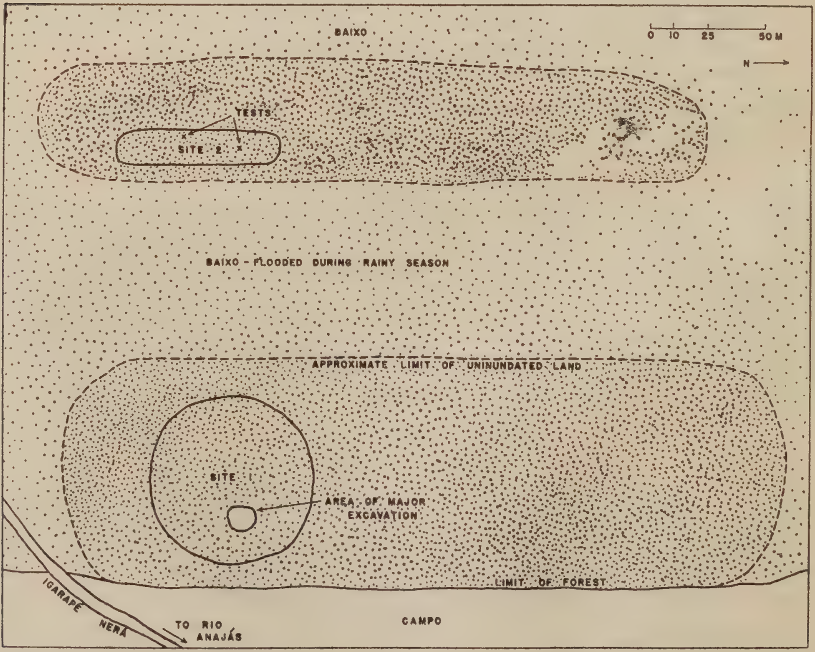
BAIXO
0 10 25 50 M
N
TESTS
SITE 2
BAIXO - FLOODED DURING RAINY SEASON
APPROXIMATE LIMIT OF UNINUNDATED LAND
SITE 1
AREA OF MAJOR EXCAVATION
LIMIT OF FOREST
IGARAPÉ NERÁ
TO RIO ANAJÁS
CAMPO

FIGURE 62.—Plan of J-16—Canivete, a habitation site of the Mangueiras Phase.

Since the deposit was too shallow to give stratigraphic results, a sherd sample was secured by an excavation equivalent to a 1.5 by 1.5 meter area in Mound 1 (the larger and deeper site) and by scattered smaller tests in Mound 2. The collection from Mound 1 numbered 599 sherds and 28 clay lumps, a few of which were fired. Mound 2 is represented by 123 sherds and 1 clay lump.

SITE C-3—PORTO REAL

One Mangueiras Phase habitation site was located on the Island of Caviana, 4 km. northeast of a point 5 km. above the mouth of the Igarapé Pocoató, which drains into the south coast (fig. 151). The entire area is covered with forest, which stretches unbroken by clearings for several kilometers from the site in all directions. The habitation area occupies a roughly circular space, about 25 meters in diameter, on the south edge of a slight natural rise. The lower land stretching off to the south is covered with up to a meter of water during the rainy season. The nearest surface water during the dry season at the present time is the Igarapé Pocoató. The soil color on the site is distinctly darker than in the surrounding area, and small sherds were scattered over the surface.

Two stratigraphic excavations were undertaken: Cut 1, 5 meters from the eastern edge of the site, and cut 2 north of the center. Both were 1 by 1 meter and controlled in 8 cm. levels. The soil in both cuts was black and well loosened by root action. Sterile soil, a light-gray clay with orange flecks, was reached at 38 cm. in cut 1 and at 34 cm. in cut 2. Cultural remains recovered totaled:

Cut 1:

Level .00–.08 m.: 170 sherds.
Level .08–.16 m.: 277 sherds, 10 burnt-clay lumps, 1 small stone chip.
Level .16–.24 m.: 341 sherds, 11 burnt-clay lumps, 1 ceramic labret (?)
Level .24–.32 m.: 153 sherds, 5 burnt-clay lumps.
Level .32–.40 m.: 28 sherds and 1 clay lump.

Cut 2:

Level .00–.08 m.: 154 sherds.
Level .08–.16 m.: 237 sherds, 2 burnt-clay lumps, 1 broken pipestem, 1 ceramic labret (?) fragment.
Level .16–.24 m.: 175 sherds, 3 burnt-clay lumps.
Level .24–.32 m.: 147 sherds, 1 incised, biconical, pottery object.

An additional 1,551 sherds and 35 burnt-clay lumps, and another possible ceramic labret were collected from the surface and miscellaneous tests.

Pipe.—The pipe fragment is part of a tubular pipe similar to those from J–5—Croarí, except that it has a round instead of a flattened mouthpiece (fig. 58, *b*). The ceramic type is Mangueiras Plain, with a light-tan, well-smoothed surface. The sides taper outward from a diameter of 8 mm. at the end toward the bowl, which the interior contour indicates to have been conical. The existing length is 2.5 cm.

Labrets.—Three small objects, one from each cut and one from the surface collection, possibly functioned as lip or ear plugs. The complete specimen (surface collection) is collar-button-shaped, with a disk 2.4 cm. in diameter, slightly concave on the face, and a short shaft widening to a head 1 cm. in diameter, also with a slightly concave surface (fig. 63, *a*). Overall length is 1.4 cm. The two fragmentary specimens (fig. 63, *b-c*) represent the disk end, with the head broken off. The diameters are 2.3 cm. and 3.5 cm. All three are Mangueiras Plain, with light-tan surfaces and no trace of decoration.

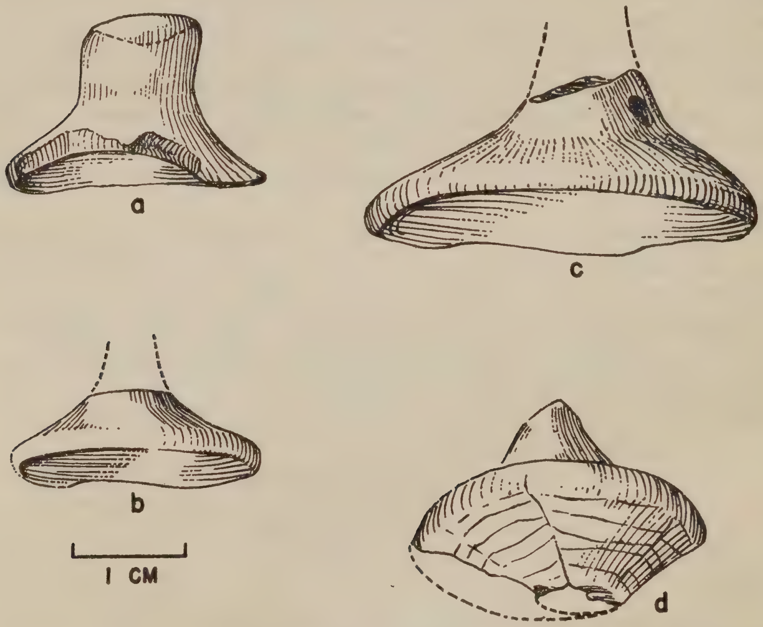

FIGURE 63.—Labrets and biconical object of pottery from C-3—Porto Real, Mangueiras Phase.

Biconical object.—A fragment of an incised object from cut 2, level .24-.32 meter, is of undetermined use (fig. 63, *d*). It is biconical, tapering sharply from a diameter of 2.5 cm. toward both ends, which are broken off. One surface is plain, the other is lightly incised with fine scratches in a series of crudely drawn concentric circles and quadrant lines. The ceramic type is Mangueiras Plain.

DATA FROM OTHER INVESTIGATIONS

SITE J–17—FLOR DO ANAJÁS

Subsequent to our fieldwork on Marajó, Peter Hilbert of the Museu Goeldi made a trip to the vicinity of Lago Ararí and located a Mangueiras Phase site underlying the present town of Flor do Anajás (fig. 47). This site, designated as J–17, is on the west bank of the Rio Ararí, 80 meters north of its junction with the Anajás-mirí (Anajasinho). The bank here is about 2.50 meters above the river level in the dry season, and remains free from flooding even when the surrounding area is inundated. The refuse deposit, indicated by abundant surface sherds, extends about 150 meters along the bank and 30 to 50 meters inward. Sherds protrude to a depth of 10 to 20 cm. in the eroded bank, and a 1.5 meter square excavation near the northwest end of the site also produced sherds to a depth of 20 cm.

The collection, sent to us for analysis, included:

Level .00–.15 m.: 229 sherds.
Level .15–.30 m.: 39 sherds, 5 burnt-clay lumps, and one clay ball 2 cm. in diameter, possibly the foundation for a figurine head (cf. p. 197).

The surface collection produced 140 additional sherds (Hilbert, pers. corres.).

ANALYSIS OF MATERIALS OF THE MANGUEIRAS PHASE

Pottery Type Descriptions

The habitation sites of the Mangueiras Phase on Marajó and Caviana Islands produced 13,724 sherds. Analysis of these resulted in the classification of the following pottery types, named by the binomial system and listed in alphabetical order:

ANJOS PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: Ground sherd, particles in a single specimen ranging from fine grains (0.5 mm.) to large hunks (4–6 mm.). Temper usually easily visible because it is a lighter orange or tan than the paste.

Texture: Uneven mixture, leaving air pockets around larger temper particles; hard to break, edges irregular, granular, and crumble easily. Dull, clayey thud when hit together.

Color: Ranges from light tan to bright, tile orange. A distinct orange to tan core is characteristic but about 10 percent have over 75 percent of the paste orange with a thin gray core. Light speckles from lighter-colored temper are often visible.

Firing: Complete, oxidized firing; no fire clouds.

SURFACES:

Color:

Exterior—Typically a tile orange with a diffuse, dusty appearance; small percentage are orange tan.

Interior—Typically a dusty, dark gray with an orange hue; 25 percent have the same tile orange to orange tan as the exterior.

Treatment: Exterior and interior—Usually sherds with better smoothed and even-surfaced exteriors are also better finished on the interior. About 30 percent of all sherds smoothed with a scraping tool and rubbed over with the hand, leaving a fairly even and regular surface. Others were smoothed over only sufficiently to obliterate the coil lines and have a very irregular and uneven surface with pits and channels from dragged temper particles. Swipe marks from fingers and hand visible on many sherds.

Hardness: Easily scratched with the fingernail; 2.5.

FORM:

Rim: Direct or exteriorly thickened with rounded, occasionally flat or pointed lip. Occasionally a slight thickening on the interior.

Body wall thickness: 5–10 mm.; majority 7–8 mm.

Body diameters: Range 26–60 cm. with the majority of the large jars around 50 cm.

Base: Rounded and slightly thickened, usually 2–5 mm. thicker than the body wall.

Vessel shapes reconstructed from sherds:

1. Globular jars with walls curving inward to a direct rim with a rounded lip. Mouth diameter 12–30 cm.; majority 14–20 cm. Maximum body diameter 26–60 cm. (fig. 64–1).
2. Globular-bodied jars with constricted mouth and prominent exteriorly thickened rim with rounded lip. Rim cross section 1.5 cm. thick; rim diameter 16–24 cm. (fig. 64–2).
3. Jars with rounded body, wall slanting inward to a direct rim with squared or rounded lip. Mouth diameter 14–36 cm.; majority 18–28 cm. (fig. 64–3).
4. Jars with rounded body, walls insloping to exteriorly thickened rim with rounded lip. Rim diameter 14–34 cm.; majority 18–26 cm. (fig. 64–4).
5. Bowls with rounded body, outcurving sides and direct rim with pointed or rounded lip. Rim diameter 12–34 cm. (fig. 64–5).

Appendages: Loop handle with a round cross section ranging from 1–2 cm. in diameter. Attached by affixing to the vessel and kneading extra clay around the point of attachment. Length 5–8 cm. and extending 5 cm. out from the jar wall. Rare and apparently limited to large jars.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Vessel shape 4 is the dominant jar form in the early part of the Mangueiras Phase and shows a decline in frequency throughout time. Shapes 1, 2, and 3 are unimportant until the latter part of the Phase. (Appendix, table 29).

CHRONOLOGICAL POSITION OF THE TYPE: Anjos Plain is absent in the earliest part of the Mangueiras Phase sequence but after its appearance it increases in frequency until the end of the Phase.

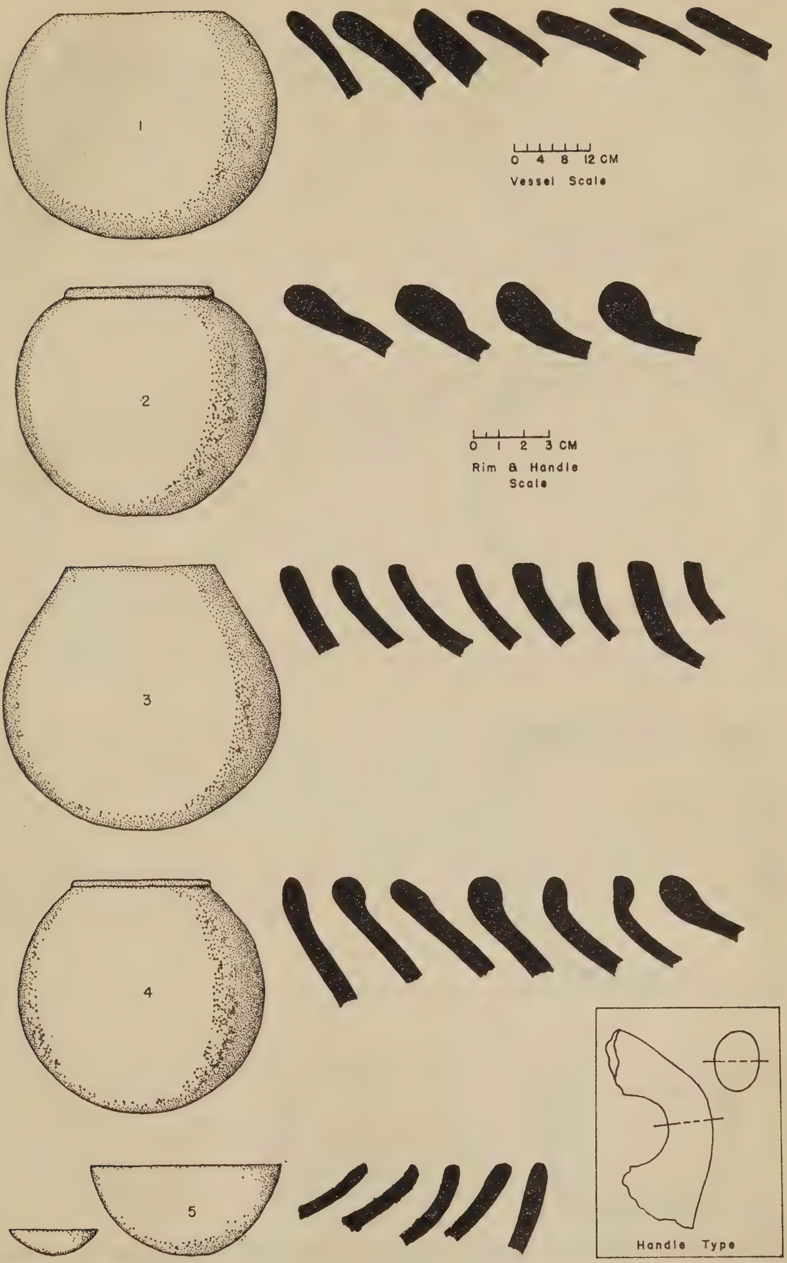
1
0 4 8 12 CM
Vessel Scale
2
0 1 2 3 CM
Rim & Handle Scale
3
4
5
Handle Type

FIGURE 64.—Rim profiles and vessel shapes of Anjos Plain. Mangueiras Phase (Appendix, table 29).

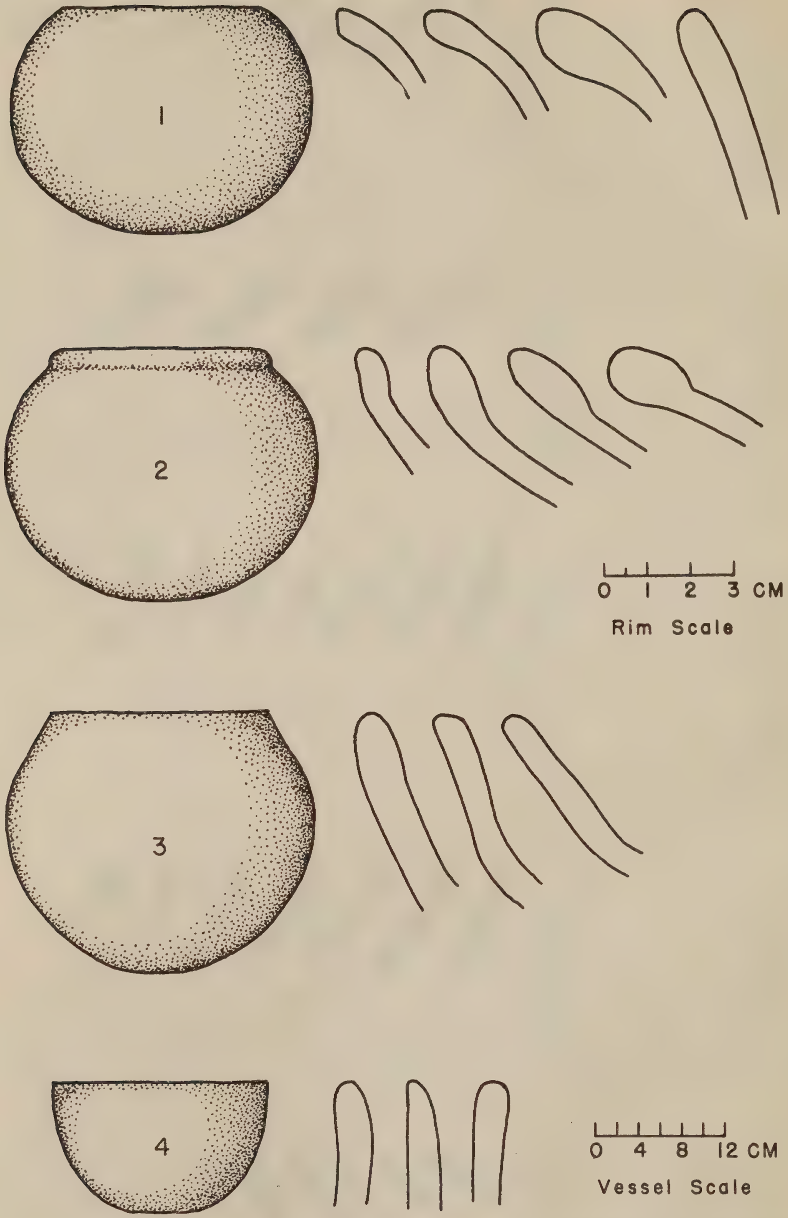
1
2
0 1 2 3 CM
Rim Scale
3
4
0 4 8 12 CM
Vessel Scale

FIGURE 65.—Rim profiles and vessel shapes of Bacurí Brushed, Mangueiras Phase (Appendix, table 30).

BACURÍ BRUSHED

PASTE AND SURFACE: This brushed variety occurs on Anjos Plain; see that pottery type description for details of paste, color, temper, etc.

FORM:

Rim: Majority direct with rounded or angular lips; a lesser number with exterior thickening and rounded lip, or interior thickening.

Body wall thickness: 5–14 mm.; majority 8–9 mm.

Base: None had brushing on them; hence probably the same as Anjos Plain.

Vessel shapes reconstructed from sherds:

1. Jars with globular bodies, interiorly thickened or direct rim with rounded or flat lip. Rim diameter 14–22 cm.; body diameter estimated as 40–60 cm. (fig. 65–1).
2. Globular-bodied jars with constricted mouth and exteriorly thickened rim with rounded lip. Mouth diameter 14–20 cm. (fig. 65–2).
3. Jars with rounded body, walls insloping to direct rim with rounded or flat lip. Rim diameter ranges 16–26 cm., majority 18–22 cm. Body diameter 32 cm. (fig. 65–3).
4. Bowls with nearly vertical sides, direct rim with rounded lip. Mouth diameter ranges 20–27 cm., majority 20–22 cm. (fig. 65–4).

DECORATION: Brushing with a bunch of twigs on the exterior surface (pl. 43). Majority were given a single brushing but 20 percent were brushed a second time in a direction diagonal to the first marks, producing a crude cross hatching. The striations are 1–3 mm. wide, with the majority 1 mm., and spaced from adjacency to 4 mm. apart. Depth varies from 0.5–2.00 mm. (typically 1 mm.) and is probably related to the wetness of the surface at the time of application. Direction of the strokes is predominantly vertical but about one-third of the jars with short necks are brushed horizontally around the neck and vertically or diagonally on the body.

TEMPORAL DIFFERENCE WITHIN THE TYPE: Bacurí Brushed occurs only in the latter part of the Mangueiras Phase. It reaches its greatest frequency in the lower levels of Site J–13 and its greatest refinement at Site J–16, where the brushing is finer and the lines are more evenly spaced and applied to produce a regular cross hatching. No trends are evident in vessel shape (Appendix, table 30).

CHRONOLOGICAL POSITION OF THE TYPE: Late type in the Mangueiras Phase, possibly a reflection of Ananatuba Phase contact where brushing was one of the main methods of decoration.

CROARÍ BRUSHED

PASTE AND SURFACE: On Mangueiras Plain; see that type for details of paste, temper, firing, etc.

FORM:

Rim: Everted or exteriorly thickened with flattened top and squared, pointed or rounded lip.

Body wall thickness: Range 4–11 mm.; majority 8 mm.

Bases: Rounded, generally uneven and irregular.

Vessel shapes reconstructed from sherds:

1. Jars with globular body, constricted mouth and everted rim, sometimes exteriorly thickened, with flat or rounded lip. Size ranges from miniatures 6 cm. in diameter and 6.5 cm. tall to large vessels with a rim diameter of 24 cm. (fig. 66–1).
2. Bowls with outsloping sides and slightly everted, flat-topped rim with rounded lip; rim diameter 18 cm. (fig. 66–2).

Decoration: Applied by brushing vertically, beginning just below the rim and sweeping downward over the upper part of the body, but not extending over the base (pl. 44). Variation from fine scratches to lines 2–3 mm. wide, according to the size of the sticks used. On 64 percent the first brushing was crossed over by another producing a crisscross effect. A few have a horizontal line 1–2 cm. wide along the upper limit of the marks below the rim, providing an even demarcation for the beginning of the lines.

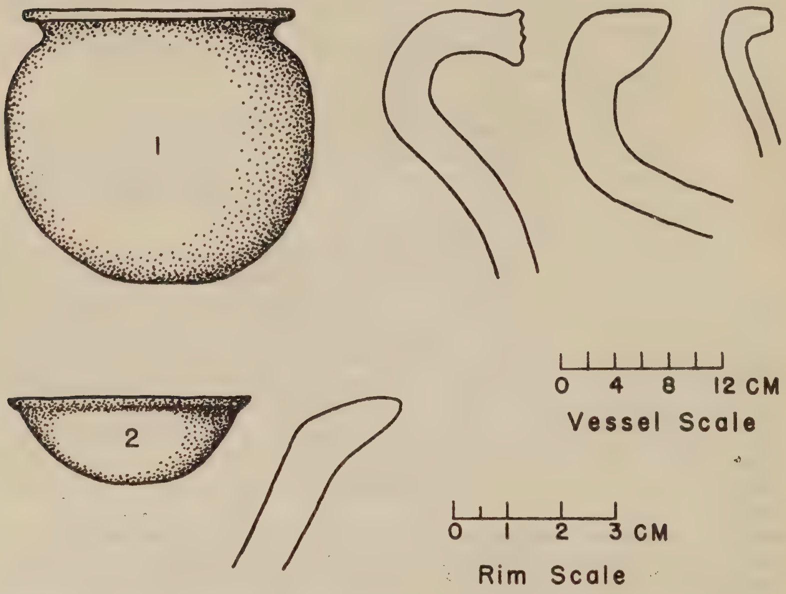

Figure 66.—Rim profiles and vessel shapes of Croarí Brushed, Mangueiras Phase (Appendix, table 30).

Temporal difference within the type: None (Appendix, table 30).

Chronological position of the type: Croarí Brushed occurs only at Site J–5, the earliest site in the Mangueiras Phase.

ESPERANÇA RED

Paste and surface: On Mangueiras Plain paste; see that description for details of temper, texture, firing, and surface treatment.

Form:

Rim: Interiorly thickened, direct, everted or exteriorly thickened, with square lip. Rarely the lip is rounded, undulating, or scalloped.

Body wall thickness: 5–10 mm.; majority 7 mm.

Base: Rounded and slightly thickened.

Vessel shapes reconstructed from sherds:

1. Bowls with broad, flat rim top produced by eversion or interior thickening, flattened bottom and outsloping sides. Rim diameter 18–44 cm.; majority 26–40 cm. Lip square and occasionally scalloped (fig. 67–1).

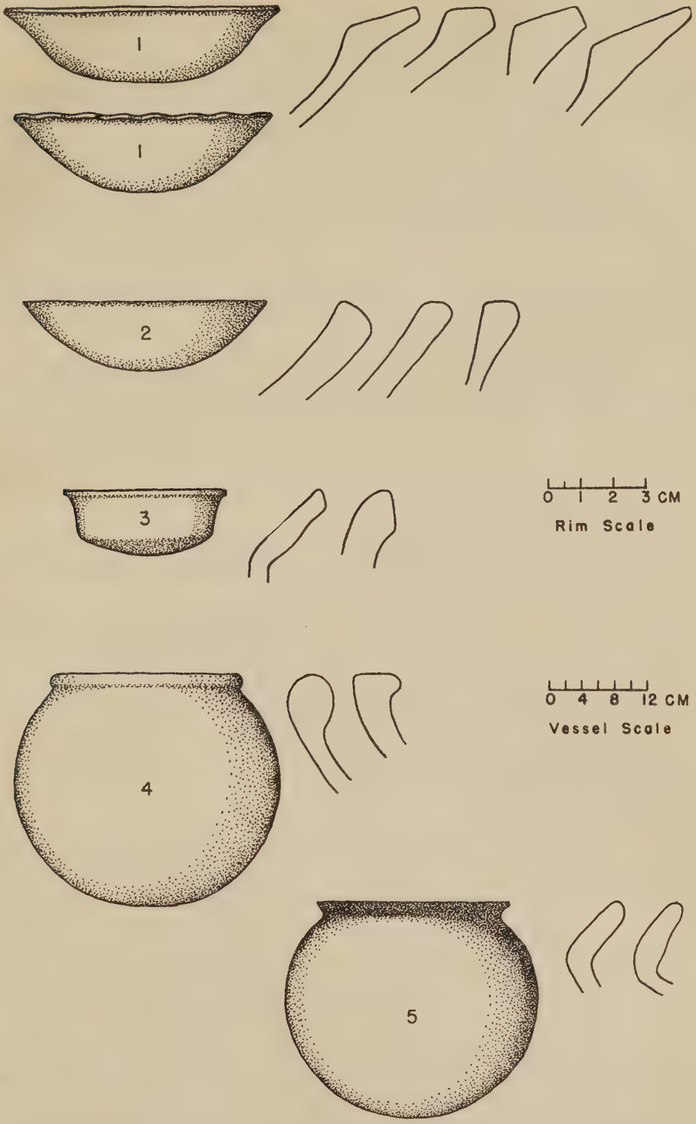
1
1
2
3
0 1 2 3 CM
Rim Scale
4
0 4 8 12 CM
Vessel Scale
5

Figure 67.—Rim profiles and vessel shapes of Esperança Red, Mangueiras Phase (Appendix, table 32).

2. Bowls with rounded or flattened bottom, sides curving outward and upward to direct rim with expanded, square lip. Diameter 10–40 cm.; majority 24–40 cm. (fig. 67–2).
3. Bowls with rounded bottom, vertical sides and everted rim with square lip. Rim diameter 9–26 cm. (fig. 67–3).

4. Jars with rounded body and exteriorly thickened rim with rounded lip. Rim diameter 20–26 cm. (fig. 67–4).
5. Jars with rounded body and everted rim (fig. 67–5).

DECORATION: Surfaces rubbed with a red ocher polishing stone when clay fairly wet, causing floating and streaking with red. Degree of polishing determines the thickness and color of the surface layer; bright red-surfaced sherds are the best smoothed. About 10 percent are deep, dull red; the remainder tannish red to dark brown because of differential polishing, firing, and weathering. The surface lacking red pigment is in most cases less well smoothed, often showing prominent tracks and having a regular to slightly irregular or uneven surface.

TEMPORAL DIFFERENCE WITHIN THE TYPE: The most typical examples of Esperança Red are from the later levels at Sites J–5 and C–3. The small sample shows no trend in vessel shape (Appendix, table 32).

CHRONOLOGICAL POSITION OF THE TYPE: Attains a maximum frequency in the upper levels at J–5 and then declines and disappears just before the Mangueiras Phase comes to an end.

MANGUEIRAS PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: Large amount of ground sherd with size range from 0.5–4.0 mm. Easily distinguished by angularity and flat, smoothed surfaces of some of the particles.

Texture: Compact, well-mixed paste with temper evenly distributed; sharp, angular cleavage; good tensile strength, hard to break and drops with a good ring.

Color: Tan to salmon on immediate surface. Dark gray or black core in 75 percent of sherds. Remainder fired with an orange band 1–3 mm. wide on exterior leaving the remaining cross section black or gray.

Firing: Incompletely oxidized with a large number of fire clouds.

SURFACE:

Color: Exterior and interior—Salmon to tan to gray to dark gray. One-third of the sherds have fire clouds on one surface making the complete color range possible on a single sherd. Light and dark gray are the most typical of the coarse, heavier sherds, and the highest percentage of salmon appears on thinner sherds. About 10 percent are dark gray on both surfaces and 20 percent salmon on both surfaces with the remainder exhibiting various combinations of the complete range.

Treatment: Surfaces range from velvety smooth to rough and irregular, with about 30 percent in the well-smoothed category. The thinner-walled sherds are usually the best smoothed. The smoothing process was carried out when the clay was moderately wet leaving no scraping tracks. A few of the more rough and irregular sherds are gritty to the feel. Crackle lines and fine pits from water bubbles are common, even on the velvety-smooth sherds.

Hardness: 2.5–3.0.

FORM:

Rim: Direct, exteriorly thickened or everted with typically rounded lip on jars; direct, interiorly thickened, everted or exteriorly thickened with rounded or angular lip on bowls (pl. 45).

Body wall thickness: Range from 4–20 mm.; majority 5–10 mm.

Body dimensions: Jars 10–50 cm. in maximum body diameter.

Base: Rounded on bowls and plates. Jar bases are of 3 major types:

1. Rounded, varying from almost flat to a curvature continuing that of the body walls and thickened on the interior.
2. Concave, 5–10 cm. in diameter, with a depression 1–2 cm. deep in the center on the exterior, sometimes reflected in a slight convexity on the interior. In this type the junction with the body wall is often a marked angle of 40–50 degrees.
3. Flattened and thickened to produce a flat or convex interior surface. Junction with body wall is an angle of 30–50 degrees. Diameter 12–20 cm., thickness 1.0–1.5 cm. at the body wall and 1.5–3.0 cm. at the center.

Vessel shapes reconstructed from sherds:

1. Globular-bodied jars with flattened bottom and everted, collarlike rim with a rounded lip; lip rarely pointed or squared. Rim diameter 10–32 cm.; majority 14–22 cm. (fig. 68–1).
2. Globular-bodied jars with flattened bottom, rounded lip, exteriorly thickened rim, constricted mouth. Rim diameter 12–20 cm. (fig. 68–2).
3. Jars with flattened bottom, rounded body, upper walls insloping to a direct rim with a rounded lip. Rim diameter 10–28 cm. (fig. 68–3).
4. Globular-bodied jars with direct rim, rounded lip. Mouth diameter 10–44 cm.; majority 12–24 cm. (fig. 68–4).
5. Wide-mouthed jars with rounded body, slightly insloping upper walls terminating in an exteriorly thickened rim. Rim diameter 10–34 cm. (fig. 68–5).
6. Bowls with flattened bottom, outsloping sides, direct rim with a rounded or angular lip. Rim diameter 9–34 cm.; a few miniatures with diameter of 4–8 cm. and a few very large with diameters 35–44 cm. (fig. 69–6).
7. Bowls with flattened bottom, outsloping sides, rim interiorly thickened or everted to produce a broad level inner surface or top; lip rounded. Diameter 18–44 cm.; majority 26–40 cm. Occasionally the lip is undulating or scalloped (fig. 69–7).
8. Bowls with rounded bottom, vertical sides and everted or exteriorly thickened rim with rounded or angular lip. Rim diameter 8–32 cm. (fig. 69–8).

Appendages:

Rim adornos: Occasionally the rims have simple adornos in the form of protruding lips or scalloped edges extending from 1.0–2.5 cm. beyond the normal rim edge (pl. 45).

Handles: Large loops, with a round cross-section ranging from 1.3–2.0 cm. in diameter were affixed directly to the jar wall and thickened at the point of attachment. Length is 5–8 cm. Handle protrudes 4–6 cm. from the vessel surface.

Occasional decoration: A few jars have ornamental unsmoothed coils on the neck exterior (pl. 45, *c*).

TEMPORAL DIFFERENCES WITHIN THE TYPE: The occasional appearance of unsmoothed coils on the neck exterior appears to be a trait adapted from the Ananatuba Phase since it occurs only at Site J–7, where the initial contact took place, and at later sites. Vessels of shapes 1 and 7 are abundant in the early sites and rare or absent in the later ones. Shapes 3 and 4 are the dominant

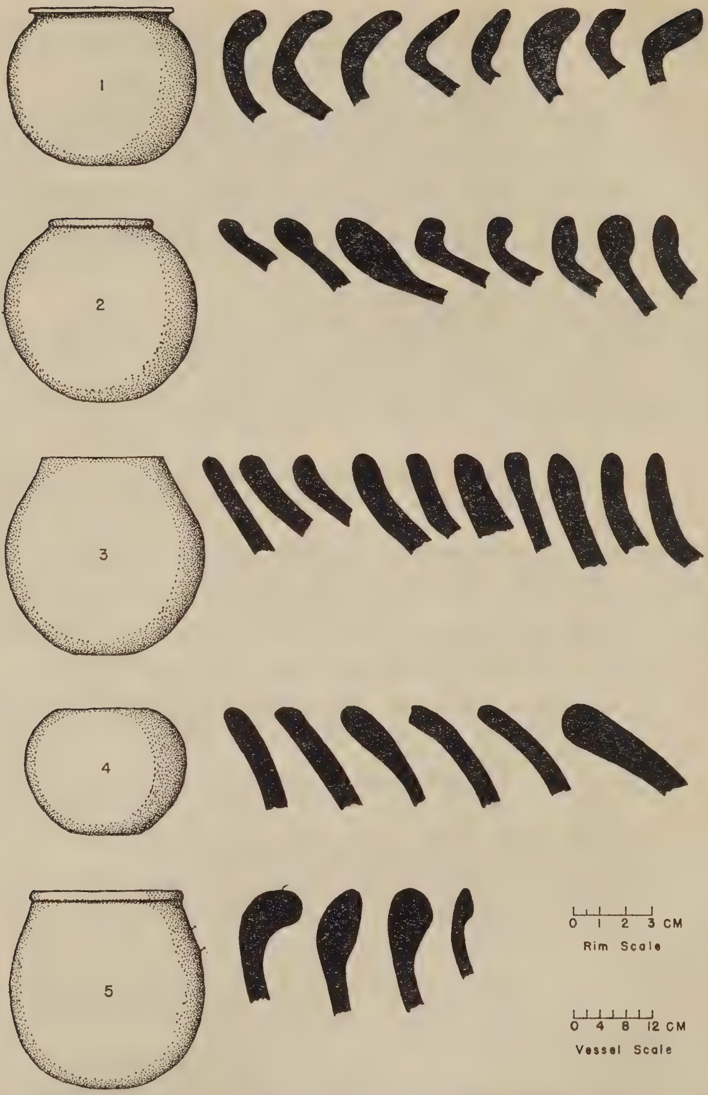

FIGURE 68.—Rim profiles and vessel shapes of Mangueiras Plain jars, Mangueiras Phase (Appendix, table 31).

jar forms of the late sites, and are absent or very rare in the early ones. Shapes 5 and 8 show a decline in frequency from early to late sites (Appendix, table 31). An important trend in the appearance of Mangueiras Plain is its tendency to approach the Anjos Plain dusty orange surface color in the latter part of the Phase, in contrast with the range from salmon to black characteristic of the earlier sites.

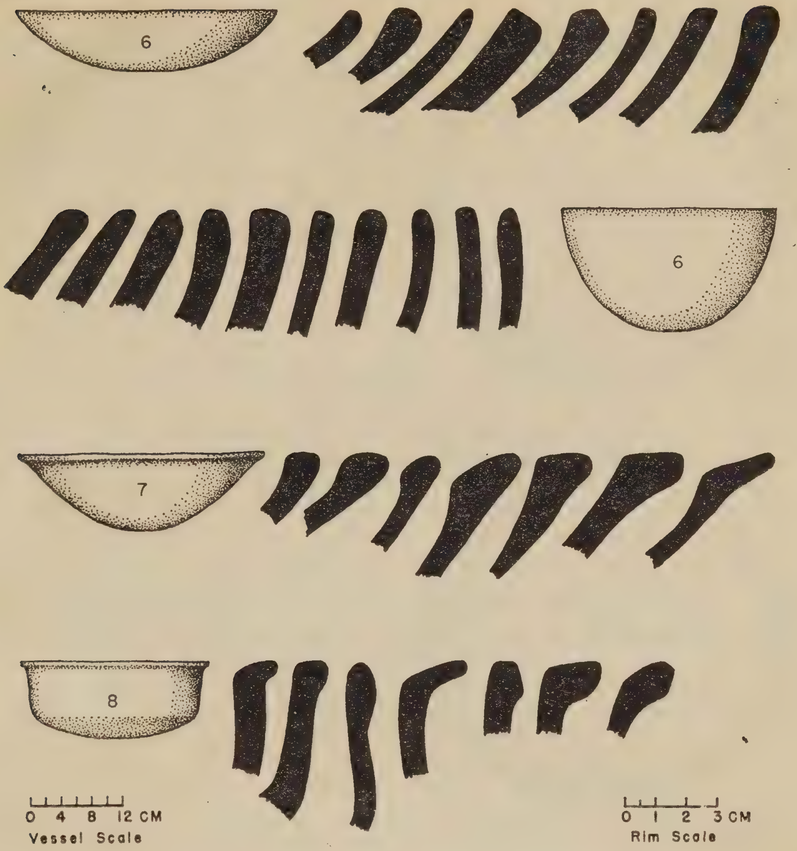

Figure 69.—Rim profiles and vessel shapes of Mangueiras Plain bowls. Mangueiras Phase (Appendix, table 31).

Chronological position of the type: Mangueiras Plain is the dominant plain ware at the beginning of the Mangueiras Phase and declines in frequency with the increasing popularity of Anjos Plain.

POCOATÓ SCRAPED

Paste and surface: On Mangueiras Plain; see this type for details of paste, temper, firing, etc.

Form:

Rim: Direct with rounded or square lip; everted to produce a flat, broad upper edge; occasionally thickened on the exterior.

Body wall thickness: 5–12 mm., majority 8 mm.

Bases: Flattened on exterior and slightly thickened on the interior to 1½ times the body wall thickness.

Vessel shapes reconstructed from sherds:

1. Globular jars with flattened base, everted rim and rounded or squared lip. Rim diameter 16–28 cm. (fig. 70–1).

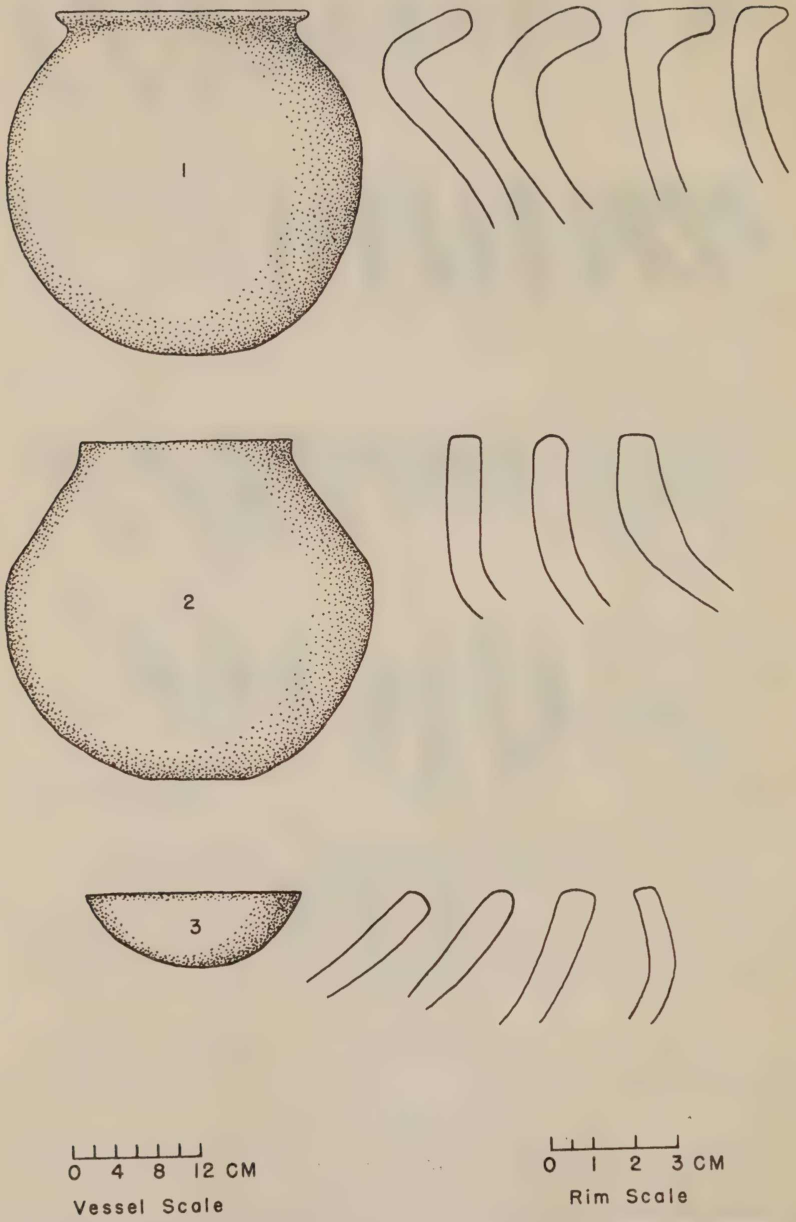
1
2
3
0 4 8 12 CM
Vessel Scale
0 1 2 3 CM
Rim Scale

FIGURE 70.—Rim profiles and vessel shapes of Pocoató Scraped, Mangueiras Phase (Appendix, table 32).

2. Jars with globular bodies, upper walls insloping to short vertical neck, direct rim and square or rounded lip. Rim diameter 16–22 cm. (fig. 70–2).
3. Shallow bowls with direct rim and square or rounded lip. Mouth diameter 15–25 cm. (fig. 70–3).

DECORATION (pl. 46):

Technique: Pocoató Scraped is distinguished from Croarí Brushed by the broadness and angularity of the marks, which are flat channels separated by narrow, flat-topped ridges. The surface is left extremely irregular and uneven and the scraping or combing was done when the clay was moist enough to leave the ridges distinct. The marks are typically 1–4 mm. in width and about 1 mm. deep with a few examples, apparently from larger jars, 1.3 cm. in width. The majority are around 2 mm. in width.

Motif: The scraping marks are applied to the jar exteriors horizontally around the neck below the rim, or the horizontal band is omitted and the vertical or diagonal scrapings begin at the neck. On bowl exteriors the direction of scraping is around the circumference. A few examples have scraping lines running in two directions producing a hachured or herringbone effect, but with no apparent effort at regularity so that the result is crude in comparison with those specimens scraped in one direction only. A considerable number of sherds were scraped on both interior and exterior, with the directions of the lines not always the same, since those on the interior are uniformly parallel to the rim. A great many are scraped on the interior only, which raises the possibility that this method of decoration may have developed from what was at first an accidental by-product of scraping and smoothing the interior surface.

TEMPORAL DIFFERENCE WITHIN THE TYPE: None (Appendix, table 32).

CHRONOLOGICAL POSITION OF THE TYPE: Limited to the sites in the early part of the Mangueiras Phase sequence.

PSEUDO–SIPÓ INCISED—MANGUEIRAS PHASE VARIETY

PASTE: All but 10 percent are on Mangueiras Plain, the remainder on Anjos Plain. See those pottery type descriptions for details of paste, temper, and firing.

FORM:

Rim: Direct or slightly everted rim with rounded or flattened lips. Rim diameters from 10–24 cm.

Body wall thickness: 5–9 mm.

Bases: Probably rounded.

Vessel shapes reconstructed from sherds:

1. Globular jars with constricted mouth, direct rim and rounded lip. Mouth diameter 14–24 cm. (fig. 71–1).
2. Globular-bodied jars with insloping neck, direct rim, rounded or flattened lip. Rim diameter 10–20 cm. (fig. 71–2).
3. Shallow, rounded bowls with direct or slightly everted rim, rounded lip. Diameter 10–24 cm. (fig. 71–3).

DECORATION (pl. 47, *a–g*)*:* The incised designs are copied from Sipó Incised of the Ananatuba Phase (see pp. 185–187). At Site J–14—Bacurí, design types 1, 2, 4, 5, and 6 occur; at Site J–16—Canivete, design types 1, 5, and 6; at Site J–17—Flor do Anajás, design types 2 and 6.

TEMPORAL DIFFERENCE WITHIN THE TYPE: None (Appendix, table 32).

CHRONOLOGICAL POSITION OF THE TYPE: This pottery type appears as one of the wares of the Mangueiras Phase immediately after the conquest of the

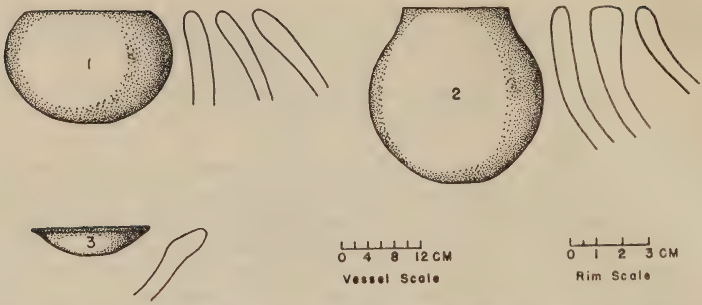

FIGURE 71.—Rim profiles and vessel shapes of Pseudo-Sipó Incised, Mangueiras Phase variety (Appendix, table 32).

Ananatuba Phase village of J–7—Sipó and evidently represents a direct copy of the Ananatuba Phase decorative motifs. The variety and accuracy of the copy is best at Site J–13—Bacurí, which is contemporary with the Mangueiras Phase occupation of Site J–7—Sipó and closer geographically to Site J–7 than are the other two Mangueiras Phase sites at which this type appears.

UNCLASSIFIED DECORATED

The largest number of sherds in this group come from the three earliest sites of the Mangueiras Phase, J–5, J–17 and C–3. Four techniques are represented: incision, punctate, excision, and corrugation.

Unclassified incised:

1. Rims of Mangueiras Plain, shape 7, with incised designs on the broad, flat top. Motifs are mainly parallel, straight or zigzag lines and spirals. Techniques may be broad, 2–4 mm. wide, lines or narrow lines and small areas of fine cross-hatch. Total from J–16, 15 sherds; J–17, 1; and C–3, 3 (pl. 47 *j*, *l*–*n*).
2. Body sherds with simple geometric design of widely spaced lines, the surface covered completely or in zones with fine incisions or scratches. Total from J–5, 1 sherd; C–3, 2 sherds; J–16, 2 sherds.
3. Body sherds with simple geometric designs of parallel, straight or curved lines. Total from J–5, 1 sherd; J–17, 4; C–3, 12; J–16, 1 (pl. 47, *k*).
4. Badly eroded sherds with faint incisions. Total of 14 from Site J–13.

Unclassified punctate:

1. Single row of deep evenly-spaced punctates along the rim exterior of bowls of Mangueiras Plain, shape 8. The punctates are rectanguloid at Site J–5 and circular at C–3. Total sherds from J–5, 5; C–3, 9 (pl. 47, *h*).
2. Applique rib 1.0 cm. high and 1.5 cm. wide with a row of punctates along the top or one row at each side marking the junction of the rib with the body wall. Total of 2 sherds from Site C–3.
3. Punctates applied in rows over vessel exterior. Rows relatively parallel, but punctates irregular in size and depth. Total of 2 sherds from Site J–13 (pl. 47, *i*).

Unclassified excised:

1. Background unevenly gouged out, leaving areas of the original surface. Since the sherds are all less than 2.5 cm. square, the motif is not reconstructable. Total of 4 sherds from C–3.

UNCLASSIFIED CORRUGATED:

1. Large, deep impressions made by pinching the coil between thumb and fingers. Total of 3 sherds from C–3; 7 sherds from J–13.
2. Small corrugations made by pressing downward on the coil so as to produce a scalloped lower edge (typical technique of Floripes Corrugated of the Acauan Phase). Total of 14 sherds from C–3.
3. Blunt stick instead of finger used to jab along the coil, producing a corrugated effect, but with very deep impressions between the globs. Total of 3 sherds from C–3.

Pottery Artifacts

Short, tubular pipes occur at J–5 and C–3 (fig. 58). These same two Mangueiras Phase sites produced collar-button-shaped objects that probably were labrets (figs. 60, 63). Figurines are represented by a head and a torso of different figurines (fig. 59) from different levels at Site J–5. Both of these objects exhibit considerable detail in workmanship. The detailed descriptions and illustrations will be found with the various site descriptions.

Nonceramic Artifacts

No fragments or objects of stone, shell, or other nonceramic materials were encountered, with the exception of a small, unworked stone chip from Site C–3, cut 1, level 8–16 cm.

CERAMIC HISTORY

The seriation for the Mangueiras Phase is based on 13,724 sherds from 6 habitation sites. Of these 11,566 are plain ware: 4,088 Anjos Plain and 7,478 Mangueiras Plain. All but one of the sites had refuse accumulations greater than 15 cm. in depth and were excavated stratigraphically. The seriation of these levels and the changes in the frequencies of the ceramic types are shown on the accompanying graph (fig. 72).

The ceramic sequence in the Mangueiras Phase is characterized by a gradual decrease in the popularity of Mangueiras Plain, a gray-cored ware, and the concomitant increase of Anjos Plain, an orange-cored ware (Appendix, table 28). The earliest site in the sequence, J–5—Croarí, produced only Mangueiras Plain in the lower levels. Anjos Plain has a frequency of 3.5 percent at the beginning of C–3—Porto Real, and continues to grow in popularity until it has reached 71.2 percent at the end of the occupation of J–13. This increasing emphasis on Anjos Plain is reflected in changes within the Mangueiras Plain ware. At J–5, C–3, and in the lower levels of J–13, Mangueiras Plain is most typical in surface color, which runs the gamut from cream through rose to black. In the upper levels of J–13, it becomes increasingly transitional in the direction of Anjos Plain, until the two are indistinguishable in external appearance and differ only in the color of the core. Anjos Plain, on the other hand, shows a great uniformity in surface appearance from the earliest to the latest sites.

Three decorative techniques are characteristic of the Mangueiras Phase, but only at the earliest site, J–5, do they all occur together. Esperança Red, in which simple red bands are painted on the rim or interior of bowls, reaches its climax (24.4 percent) in the upper level of J–5, but persists in amounts of under 5 percent almost to the end of the Phase. Pocoató Scraped, in which parallel, troughlike marks cover the surface, also begins in the lowest level of J–5. It reaches its maximum of 28.6 percent during the first part of the occupation of C–3, declines to 4.8 percent at J–17, and is absent during the remainder of the Phase. Brushed decoration has a disconnected history. Crude brushing on Mangueiras Plain (Croarí Brushed) increases from 1.9 percent to 5.9 percent and then decreases to 3.8 percent at J–5. Brushing is completely absent at C–3, but reappears later in the Mangueiras Phase as a technique applied only to Anjos Plain (Bacurí Brushed). Its sudden reappearance as the dominant decorated technique, and the equally sudden disappearance of Pocoató Scraped, seems to have been stimulated by contact with the Ananatuba Phase, in which brushing was popular. A handful of sherds with punctate decoration occurs scattered sporadically throughout the Phase, but these are neither consistent enough in appearance nor sufficiently numerous to be interpreted as anything more than the results of occasional experimentation.

Diagnostic of the early Mangueiras Phase, and lost by Bacurí (J–13) times, is the use of broad, shallow, incised lines in rectilinear or curvilinear patterns, especially on the flat upper rim edge of shallow bowls. This trait appears suddenly, fully developed, at J–5 and is also prominent at J–17, but as the Phase continues it falls increasingly by the wayside until it finally disappears. A comparison of the technique and motifs with those of Carobal Incised of the Acauan Phase strongly suggests contact with and influence from this latter Phase. This conclusion is strengthened by the association of scattered excised and corrugated sherds, which reproduce other popular Acauan Phase surface embellishments, and by the resemblances between the scraped types present in the two Phases (Pocoató Scraped and Paciencia Scraped). The detailed analysis of the implications of this situation is given under the affiliations of the Acauan Phase (pp. 540–545).

Another fascinating decorated type from the standpoint of its origin and history is Pseudo-Sipó Incised. This type was so named in order to emphasize the fact that the motifs are identical with those of Sipó Incised of the Ananatuba Phase. It is distinguished only by being applied to Mangueiras Plain or Anjos Plain, showing that it

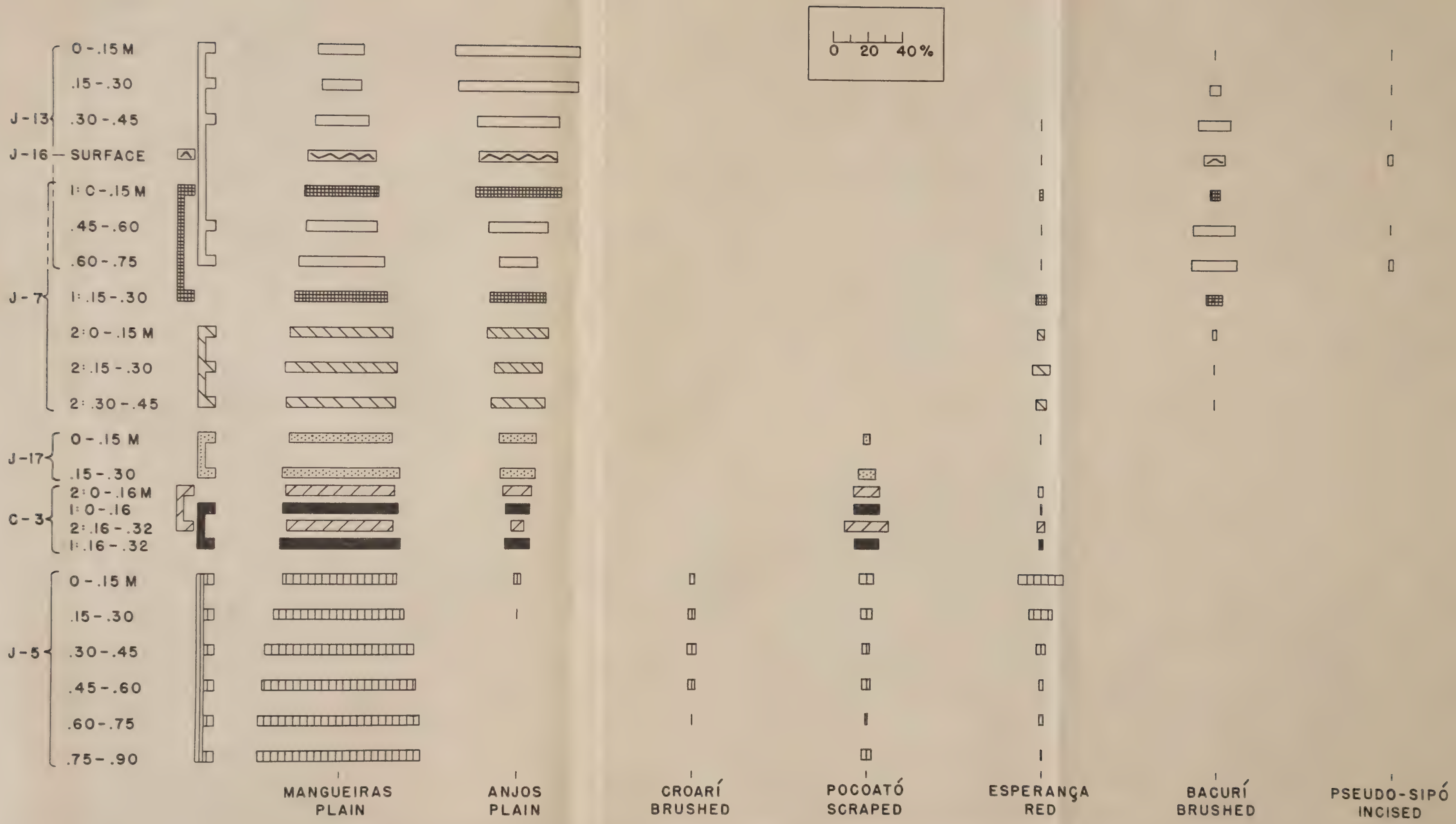

FIGURE 72.—Seriation of Mangueiras Phase sites on the basis of pottery type frequency (Appendix, table 28).

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represents the adoption and perpetuation of this alien decorative technique by the people of the Mangueiras Phase. Its popularity was such that it was quickly taken up by other Mangueiras Phase villages, as witnessed by sherds from J–13, J–16, and J–17 (fig. 72). Because of this, Pseudo-Sipó Incised provides a means for quick identification of post-Ananatuba Phase contact sites.

An analysis of vessel shape, based on 521 rims of Mangueiras Plain and 203 rims of Anjos Plain, reveals that certain shapes are associated with one or the other type and certain others with early or late sites (Appendix, tables 29 and 31). A similar ratio of bowls to jars obtains here as was noted between the plain wares of the Ananatuba Phase: 58 percent of the Mangueiras Plain rims are from bowls and only 10 percent of those of Anjos Plain. Since Anjos Plain is absent or rare in the earlier sites, it lacks two early shapes. These are Mangueiras Plain shapes 1 and 7, which are most numerous at J–5 and tend to fade out thereafter. Within Mangueiras Plain, there is a gradual shift in bowl form, with shape 8 being equally common as shape 6 in the first half of the Phase, but declining as shape 6 becomes the dominant Mangueiras Plain vessel type. Jar shape 5 is also a typically early and exclusively Mangueiras Plain form. The dominant Anjos Plain form, jar shape 4, occurs also to a minor degree in Mangueiras Plain, and persists in both types.

The most interesting aspect of the vessel shape analysis is the amount of acculturation it reveals on the part of Mangueiras Phase ceramics. While it was in the process of engulfing the Ananatuba Phase at J–7, the Mangueiras Phase was also adopting a number of Ananatuba Phase pottery traits. Examination of the remaining three jar shapes, which first appear or markedly increase in abundance in Mangueiras Phase wares at J–7, reveals that these are shapes of long standing in the Ananatuba Phase. The comparison is more pronounced when the differing frequencies of these shapes in the two plain wares are eliminated by adding the rim sherds of the same shape together and recomputing the percentage (Appendix, tables 27 and 33). Figure 73 shows the relative pre- and post-Ananatuba Phase contact occurrence of Mangueiras Plain shape 4 and Anjos Plain shape 1 (which are the same) in contrast to the history of that shape in the Ananatuba Phase. Figure 74 treats combined Mangueiras Phase plain ware shape 3 in the same way. Random occurrences in precontact Mangueiras Phase sites may be misclassification of a small sherd or deviant part of a bowl rim, or they may indicate that these shapes were present but rare until the stimulus of the Ananatuba Phase was felt. The shapes associated with the decorated types reveal an interesting dichotomy that is further evidence of the strength of the influence exerted by the Ananatuba Phase: Croarí Brushed,

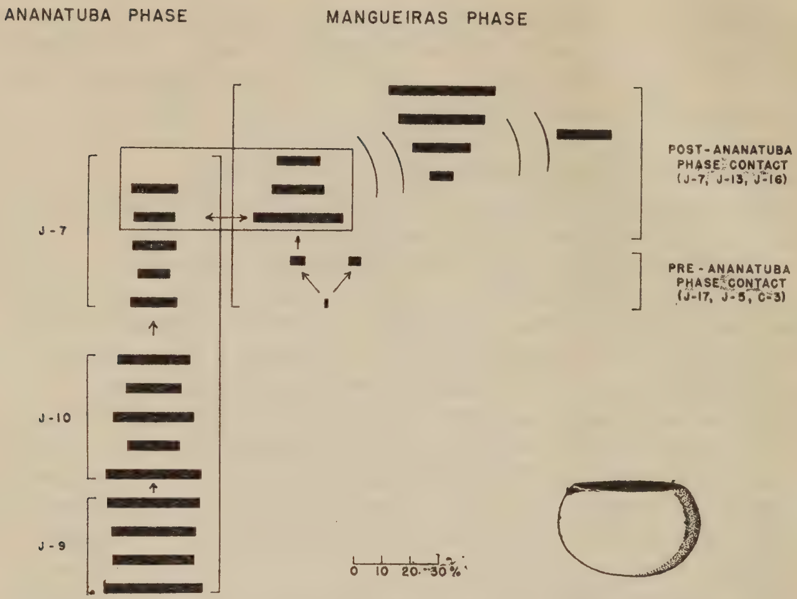

FIGURE 73.—Stratigraphic evidence for the origin by acculturation of Mangueiras Plain Vessel Shape 4 (Mangueiras Phase) from the Ananatuba Phase (Appendix, tables 27 and 33). The bars show the relative frequency of the vessel shape at sites of both Phases in seriated order.

Pocoató Scraped, and Esperança Red, which are characteristic early Mangueiras Phase decorated types, are found only on Mangueiras Phase vessel shapes, whereas Bacurí Brushed and Pseudo-Sipó Incised, representing Ananatuba Phase influence, are exclusively on Ananatuba Phase shapes. The significance of this correlation is enhanced by the fact that Esperança Red, which continues to be made in the late Mangueiras Phase, is not influenced by Ananatuba Phase vessel shapes.

An anachronistic feature of J–17—Flor do Anajás is the presence of fragments of exceedingly thick and gross, red-slipped tangas. Tangas of this type have been found at Marajoara sites, but appear not to be frequent in the best-known ones. If they are part of the Mangueiras Phase culture at this site, then a drastic revision of the seriation is required. There are several considerations, however, that suggest they are intrusive: (1) they were found only on the surface and in the upper level of the cut, and the collections from both these sources also contained fragments of modern tile and earthenware, originating from the present village (the lower level produced neither modern ceramics nor tanga sherds); (2) the site seriates early in the archeological sequence on Marajó, and Marajoara trade materials in late Formiga Phase and early Aruã Phase sites place the arrival of the

Marajoara Phase much later; and (3) The *caboclos* are active excavators of Marajoara sites and frequently bring not only complete vessels but also well-preserved adornos and other curious objects back to their houses, which could readily account for their intrusion when broken into the earlier archeological refuse. Until better evidence for contemporaneity is discovered, therefore, it seems justifiable to interpret this Marajoara Phase mixture as a recent one attributable to the modern village occupying the spot. An examination of nearby Marajoara sites may show that the heavy, red-slipped tangas are common at one of them, which would establish their source.

Diagnostic Features of the Mangueiras Phase

Mangueiras Phase sites are found over a wide area, having been identified so far from central and northern Marajó and southern Caviana. They are located in the forest where the land is not subject to annual flooding, but proximity to the *campo* seems to have been a less important factor in the choice of a village location than proximity to a navigable stream. Unlike the Ananatuba Phase, Mangueiras Phase sites are always within 250 meters of a large *igarapé*, although rarely on the immediate shore. Nor are any of these sites on the coast, the nearest (J–13) being 3 km. inland. Some are at the edge of the *campo*, others several kilometers distant. As indicated by the ceramic refuse, the villages covered an area of 2,000 to 4,000

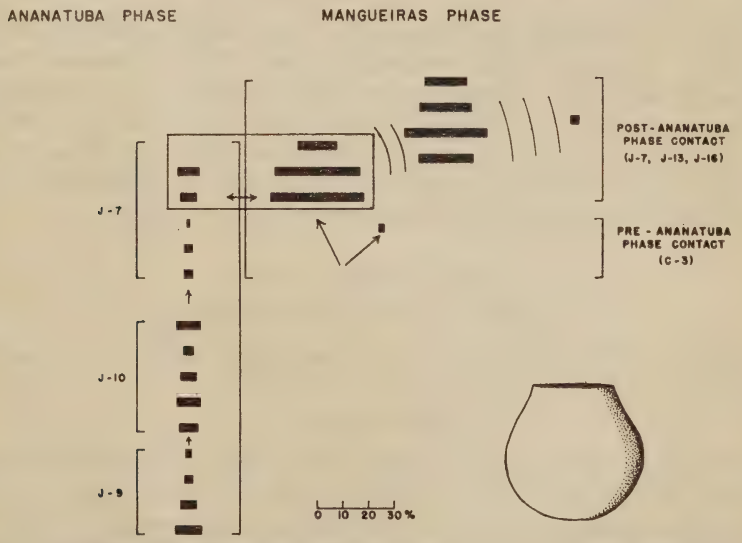

Figure 74.—Stratigraphic evidence for the origin by acculturation of Mangueiras Plain Vessel Shape 3 (Mangueiras Phase) from the Ananatuba Phase (Appendix, tables 27 and 33). The bars show the relative frequency of the vessel shape at sites of both Phases in seriated order.

square meters, except at C–3 where the site is unusually small. The depth of the deposit varies from 0.05 meter at J–16 to 1.00 meter at J–5, apparently indicating great irregularity in the length of time various villages were occupied. No cemeteries were identified, and there is no evidence of practices associated with the disposal of the dead.

The seriation of the sites belonging to the Mangueiras Phase is based on the decreasing frequency of Mangueiras Plain, a sherd-tempered, gray-cored ware, and the corresponding increase in Anjos Plain, which is more completely oxidized in firing, typically eliminating the gray core. Among the Tropical Forest Phases, this one is outstanding for its high percentage of decorated sherds, but these are mostly simple brushing and scraping, and never attain the artistic level of Sipó Incised in the Ananatuba Phase. The better quality of the ceramics, the presence of incised decoration, annular bases, and distinctive vessel shapes make for ready identification of the earliest sites, because none of these traits persist for any length of time. A late time marker is Pseudo-Sipó Incised, with designs copied from Sipó Incised the Ananatuba Phase. Typical ceramic artifacts, also early, are tubular pipes (J–5 and C–3), labrets (J–5 and C–3), and figurines (J–5). No drilled sherds or other objects identifiable as spindle whorls were encountered. The presence of irregular lumps of burnt clay in the refuse of all levels and in all sites has no ready explanation.

After contact with the Ananatuba Phase, which occurred about midway in the sequence represented here, the Mangueiras Phase ceramics underwent a strong degree of acculturation, as witnessed by the appearance of Ananatuba Phase vessel shapes and decorative techniques. Its seriated position indicates that the Mangueiras Phase did not survive into historic times and, in confirmation, no evidence of European contact was found at any of the sites.

THE FORMIGA PHASE

Description of Sites and Excavations

Formiga Phase sites are located on north and central Marajó (fig. 47).

SITE J–4—MUCAJÁ

This large habitation site is some 5 km. inland from the town of Chaves on the north coast of Marajó, near the upper reaches of the Igarapé Atura-mirí, which winds off in a northeasterly direction to empty into the Amazon several kilometers east of Chaves (fig. 86). This stream is now clogged with trees and almost dry toward the upper end. J–4 is in a natural clearing at the edge of the dense coastal forest strip, and is covered with grass and a few scattered small trees. Lake Arapapa, a small, shallow body of water, is about 1 km. to the west.

The site consists of 2 large and 4 small mounds distributed over an area of 150 by 150 meters (fig. 75). All are approximately a meter higher than the general terrain and readily distinguishable by the taller and greener grass growing on them, as well as by their elevation (pl. 31, *a*). That the height of the mounds is due in part to artificial construction is indicated by the thinness of the refuse layer and by a depression between the two largest that may have been left by excavation of dirt for the adjacent mounds. The two major mounds are parallel and run north-south. The first, on the east, measures 100 by 20 meters, and the second, just west of it, is slightly shorter. The remaining 4 mounds, 2 to the west and 2 to the south, vary from 25 to 35 meters in length and 5 to 8 meters in width. All but one have the longest axis oriented north-south. A circular depression at the northeast corner of Mound 1 may be the remnant of a well.

No sherds could be seen on the surface, and tests made at various spots on three of the mounds showed the refuse layer to be 10 cm. or less in thickness and the sherds to be sparse and in a poor state of preservation in the clay matrix. Below the refuse layer, the clay

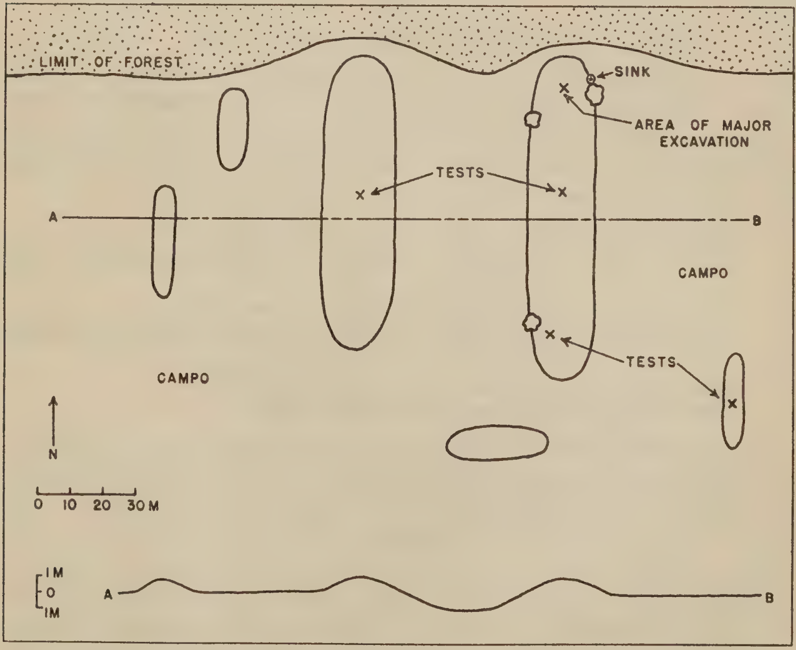

FIGURE 75.—Plan of J-4—Mucajá, a habitation site of the Formiga Phase.

became yellow in contrast to the dark gray of the occupation level. Excavation was concentrated on the north end of Mound 1, where the sherds were more profuse than in other places tested.

The sample collected included 929 sherds (of which less than 100 had surfaces in good condition), 56 burnt-clay lumps (3 with grooves as though plastered against sticks) and 2 particles of iron concretions, which show no use and are natural soil inclusions.

SITE J–6—FORMIGA

In a wide stretch of *campo* dotted with clumps of forest about 4 km. southeast of the Ananatuba Phase Site J–7—Sipó, are three small mounds (fig. 76). The grass growing on them is taller than in the surrounding area, and at the beginning of the dry season was markedly darker green (pl. 31, *b*, *c*). The nearest forested spot is a kilometer away. A small *igarapé* winding across the *campo* passes along the north edge of the site. Mound 1, the largest of the group, is oval, oriented slightly northwest by southeast, and measures 20 meters long by 8 meters wide and 1.25 meters high. Mound 2, 28 meters east of Mound 1, is 8 to 10 meters in diameter and 0.50 meter high. Mound 3, 75 meters east of Mound 2, has a diameter of 18 meters and a height of 0.50 meter. Few sherds are visible on the surface, and most of those included in the surface collection were found by the workmen digging on their own.

A stratigraphic excavation was made in each mound. Cut 1, in the center of Mound 1, was 2 by 2 meters square and controlled in 15-cm. levels. The refuse layer was black clay and of uniform character except at level .30–.45 m., when many lumps of unfired clay were encountered near the east side. Natural, sterile, yellow-brown clay was reached at 90 cm. The count by levels totaled:

Level .00–.15 m.: 209 sherds and 10 burnt-clay lumps
Level .15–.30 m.: 1,228 sherds (one worked and drilled) and 153 burnt-clay lumps
Level .30–.45 m.: 1,108 sherds and 126 burnt-clay lumps
Level .45–.60 m.: 554 sherds (1 worked and drilled) and 29 burnt-clay lumps
Level .60–.75 m.: 150 sherds and 17 burnt-clay lumps
Level .75–.90 m.: 116 sherds, 4 burnt-clay lumps

Cut 2, a little northeast of the center of Mound 3, was excavated in the same dimensions and levels as cut 1. Soil conditions repeated those in cut 1, the hard, black clay becoming slightly yellower and dryer in level .30–.45 m. Sterile soil was reached at 50 cm. At a depth of 45 cm. the west edge of the cut passed through a pocket of black clay about 15 cm. in diameter, containing fragments of burnt bone, which Marshall T. Newman, United States National Museum, was able to identify as human. There was no concentration of sherds

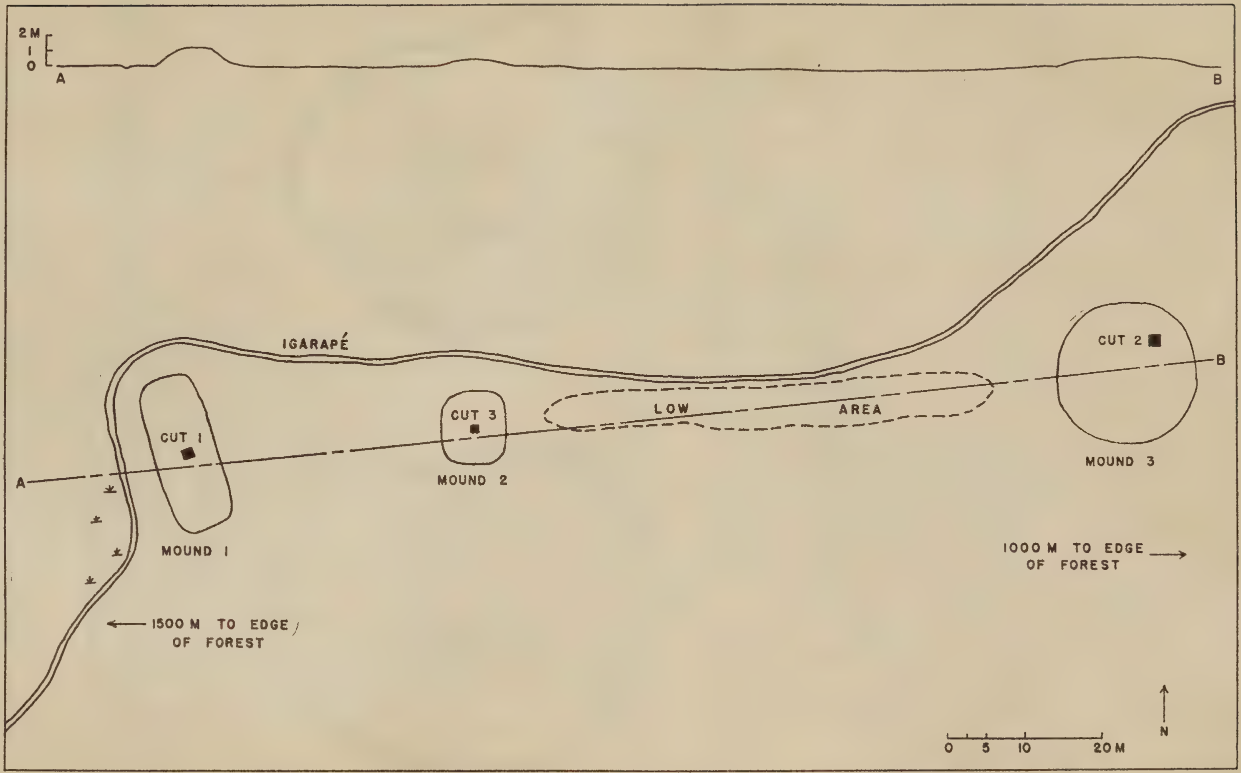
2 M
1
0
A
B
IGARAPÉ
CUT 1
MOUND 1
CUT 3
MOUND 2
LOW AREA
CUT 2
MOUND 3
A
B
1500 M TO EDGE OF FOREST
1000 M TO EDGE OF FOREST
0 5 10 20 M
N

FIGURE 76.—Plan of J–6—Formiga, a habitation site of the Formiga Phase.

near this burial that could be interpreted as constituting grave goods. The count from cut 2 by levels gives:

Level .00–.15 m.: 123 sherds and 1 burnt-clay lump
Level .15–.30 m.: 238 sherds and 1 burnt-clay lump
Level .30–.45 m.: 494 sherds and 19 burnt-clay lumps
Level .45–.60 m.: 126 sherds and 2 burnt-clay lumps

Cut 3, 1 meter square, was put in the center of Mound 2. Here the sod layer extended to a depth of 10 cm., but conditions below duplicated those in the two previous cuts, with sterile grayish-brown clay appearing at 50 cm. This test was continued to a depth of 75 cm., into the sterile soil underlying the mound. Cultural remains were distributed:

Level .00–.15 m.: 218 sherds, 1 burnt-clay lump
Level .15–.30 m.: 739 sherds, 13 burnt-clay lumps
Level .30–.45 m.: 836 sherds and 27 burnt-clay lumps
Level .45–.60 m.: 166 sherds and 11 burnt-clay lumps
To these totals, the surface collection added 146 sherds

Drilled sherds.—The two drilled sherds from cut 1 are Formiga Plain (fig. 77). Both were crudely shaped into a circle, averaging 3 cm. in diameter, and drilled through the center from both sides with a hole 6 to 9 mm. in diameter. Both are slightly concavo-convex in cross section, with a thickness of 6 mm.

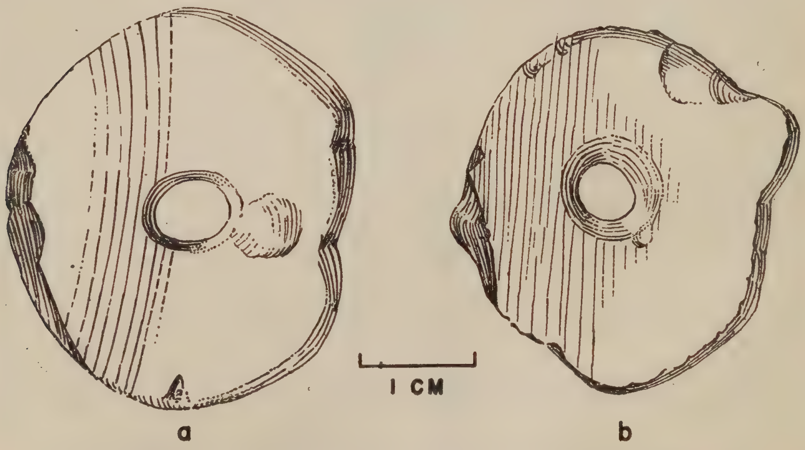

FIGURE 77.—Drilled sherds from J–6—Formiga, Formiga Phase.

DATA FROM OTHER EXCAVATIONS

SITE J–18—COROCA

The only other site that has been identified as belonging to the Formiga Phase is J–18—Coroca, on the right bank of the Rio Ararí, a few kilometers south of its junction with the Rio Anajasinho (fig. 47). It was excavated by Peter Hilbert of the Museu Goeldi, who describes it as on the edge of a rise that parallels the Rio Ararí 100 meters inland from its usual western shore. The refuse deposit overlies a low, artificial mound now covered with trees, which extends 25 meters north-south and 4 to 8 meters east-west. From an elevation of 1.00 meter at the middle, it rises to a summit 1.50 meters high at the center of each half.

A 1.5 by 1.5 meter stratigraphic excavation made in 15-cm. levels on the northern summit showed the refuse to extend to a depth of 65 cm. Soil in the first level was light-brown clay, becoming lighter in color and increasingly sandy to a depth of 60 cm., where it changed to hard, whitish clay, which continued sterile to 1 meter (Hilbert, pers. corres.).

The excavation produced the following materials:

Level .00–.15 m.: 47 sherds.
Level .15–.30 m.: 156 sherds.
Level .30–.45 m.: 214 sherds and 1 fired clay lump.
Level .45–.60 m.: 209 sherds.
Level .60–.75 m.: 17 sherds.

One clay lump and 19 additional sherds made up the surface collection. All the material was sent to us for analysis and provides important additional information on the ceramic history of the Formiga Phase.

Analysis of Materials of the Formiga Phase

Pottery Type Descriptions

The description of the Formiga Phase pottery types is based on the analysis and classification of 8,042 sherds from habitation sites. Using the binomial system of nomenclature, the following types were established, arranged in alphabetical order:

CATARINA PLAIN

It is possible that the sherds described as Catarina Plain are actually badly eroded examples of the Marajoara Phase ware, Inajá Plain. Their initial appearance coincides with that of certain Marajoara Phase decorated types, and the vessel shapes resemble those of the Marajoara Phase. Since the condition of preservation prevented an identification and correlation based on paste and surface features, it was considered safer to give these sherds a separate designation, keeping in mind the possibility they might not constitute a new Formiga Phase plain ware, but rather trade material from the Marajoara Phase.

Paste:

Method of manufacture: Coiling.

Temper: Crushed sherd. Sometimes visible as distinct bright-orange, cream, or light-gray particles with smooth surfaces which contrast with the dark-gray paste. Size ranges from 0.5–5.0 mm. Moderate amount visible.

Texture: Distinctly laminated appearance in cross section with numerous air pockets where layers have buckled slightly. Extremely poor kneading of clay and temper when clay rather dry produced poor cohesion. Easy to break with a very crumbly, irregular edge caused by each lamination breaking in a different plane. Separation along old coil lines suggests modeling when the clay was unusually dry with poor kneading of the coils.

Color: 80 percent of the sherds are fired orange in an irregular band along both surfaces and to a depth of 2 mm. leaving a medium to dark-gray core. The zone of contact between the two colors is irregular, with the orange encroaching on the gray along the lines of lamination giving the cross section a variegated appearance. Remaining sherds are gray cored with a thin brownish-tan layer on the surfaces.

Firing: Incomplete, in oxidizing atmosphere. A few fire clouds.

SURFACES:

Color: Exterior and interior—Majority of sherds are leather-red-brown sometimes shading off to a dusty-cream on both surfaces. A few have this color on exterior only, the interior being variegated gray-orange. The variegated appearance on both surfaces of 5 percent of the sherds is produced by irregularly spaced splotches of bright orange, light tan, and dark blue-gray.

Treatment: Exterior and interior—Unusually poor quality of the paste resulted in loss by erosion of the original surface in over 50 percent of the sherds. Of those in which the surface is preserved, 25 percent are partially smoothed with a hard-surfaced tool bringing finer particles to the surface and giving a dull luster, but still leaving many irregularities, small pits and tool-smoothing marks. The remaining 75 percent are superficially smoothed with the hand or fingers, erasing the coil lines but leaving a rough, uneven, coarse, soft surface.

Hardness: 2.

FORM:

Rim: Externally thickened or slightly everted with an angular inner lip edge.

Body wall thickness: Range 5–15 mm., majority 6 mm.

Body diameters: Range 22–38 cm.

Base: Flattened, joining the sidewalls at an 80-degree angle, or slightly thickened on the interior producing a slight convexity. Diameters range 22–24 cm.

Vessel shapes reconstructed from sherds:

1. Carinated bowls with flattened bottom, everted or exteriorly thickened rim. Rim diameter 26–34 cm.; diameter of flat base 22–24 cm. (fig. 78–1).
2. Jar with flat bottom, rounded body, insloping neck, exteriorly thickened rim. Rim diameter 22 cm.; maximum body diameter 28–42 cm. (fig. 78–2).

TEMPORAL DIFFERENCE WITHIN THE TYPE: None (Appendix, table 35).

CHRONOLOGICAL POSITION OF THE TYPE: Catarina Plain appears suddenly at the termination of the Formiga Phase.

COROCA PLAIN

PASTE:

Method of manufacture: Coiling indicated by breakage which occasionally leaves a concave edge on one sherd and a convex one on the corresponding edge of the part broken off.

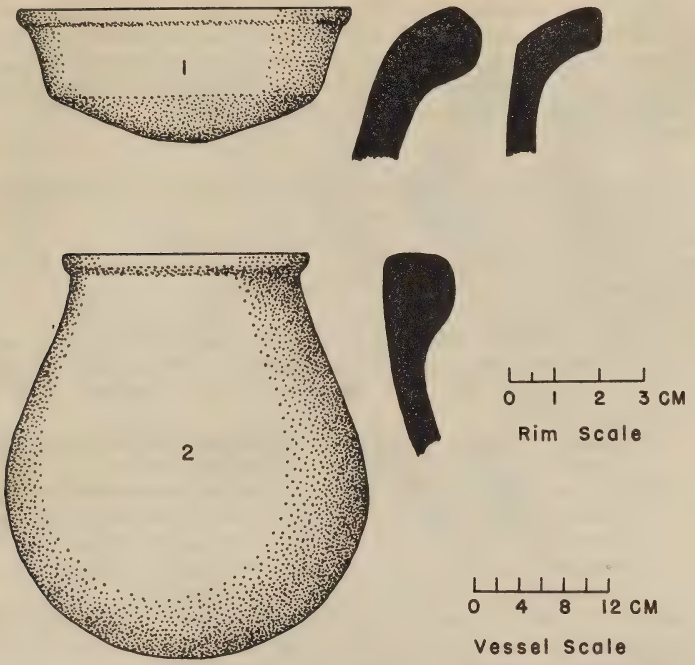

FIGURE 78.—Rim profiles and vessel shapes of Catarina Plain, Formiga Phase (Appendix, table 35).

Temper: Ground sherd with wide variation in the size of particles in each specimen. Granules are not evenly distributed, probably contributing to the general fragility of this type. Color of temper particles is typically bright orange, contrasting sharply with the gray paste.

Texture: Cleavage very irregular and granular; many air pockets. Extremely friable because of poor quality of paste composition, mixture and firing. Knocking the sherds together produces a dull thud.

Color: Whitish to light orange to bright orange beginning from the exterior surface and extending inward in a band of varying width sometimes including the entire cross section. Some trace of gray is present in about 55 percent of the sherds. The oxidation is frequently complete except for the interior surface, so that the gray "core" tends to be along the interior edge rather than in the middle of the cross section.

Firing: Oxidized, incomplete to complete; no fire clouds.

SURFACE:

Color:

Exterior—Range from light, whitish tan to light orange to pinkish orange.

Interior—The same range plus a dull gray brown, which occurs on the majority of the incompletely oxidized sherds.

Treatment: Superficial smoothing leaving small pits and protruding temper grains, and an irregular and somewhat undulating surface. Smoothing lines parallel to the rim are common on the interior; made by wiping the fingers around the circumference.

Slip appears on a majority of the sherds on the exterior, sometimes carried over to the interior on bowls. The slip is often poorly applied, with a marked variation in thickness in a small area from paper thinness to 0.5–1.0 mm. The slip was applied when the surface was too dry, making the bond poor and causing the slip to peel off readily.

Hardness: Soft; 2.

FORM:

Rim: Typically direct, or everted with a rounded lip. Occasionally with slight exterior or interior thickening.

Body wall thickness: Range 4–10 mm, majority 6–9 mm.

Base: Rounded with slight interior thickening, amounting to an increase of about one-third over the body wall thickness.

Vessel shapes reconstructed from sherds:

1. Jars with short outflaring or everted necks and curved or vertical sides producing a globular or ovoid body. Direct rim with rounded or flattened lip. Rim diameter 8–32 cm., majority 20–22 cm. (fig. 79–1).
2. Globular-bodied jars with sides incurving to a direct rim with a rounded lip. Rim diameter 14–20 cm. (fig. 79–2).
3. Small jars with globular bodies and rims either thickened on the exterior or slightly everted to produce the appearance of thickening. Rim diameter typically 7–14 cm.; sometimes 15–18 cm. (fig. 79–3).
4. Bowls with rounded bottom, outsloping sides and direct rim with rounded lip. Rim diameter 18–24 cm. (fig. 79–4).

Appendages: Three fragments of handles come from J–6—Formiga. These are round in cross section and have a small pluglike protrusion on the end for insertion into the body wall (cf. Ananatuba Plain).

TEMPORAL DIFFERENCES WITHIN THE TYPE: No vessel shape trends in the small sample of rim sherds available (Appendix, table 35).

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Formiga Phase with an early climax and a slow decline.

EMBAÚBA PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: Ground sherd, with particles ranging from 0.5–3.0 mm.

Texture: Poor mixture of clay with temper leaving many air pockets and clumps of temper particles. Cleavage plane is angular and irregular.

Color: Often mottled in appearance because of the lighter colored particles of sherd temper in the grayish paste. Except for a thin band, almost paper thin, of orange or reddish tan adjacent to both surfaces, the core is gray to black.

Firing: Incomplete oxidation; many fire clouds and splotches of bright orange.

SURFACES:

Color: Ranges from light tan to cream to orange-tan to dull gray on both exterior and interior; however, the majority are dark-tan to tannish-orange orange on exterior with a grayish interior.

Treatment: Exterior and interior—Lightly smoothed, leaving a rather uneven and irregular surface with many pits where the temper particles dragged. Roughness of surfaces made them susceptible to erosion. Some of the thinner-walled jars and bowls are slightly more regular and better smoothed.

Hardness: Soft; 2.

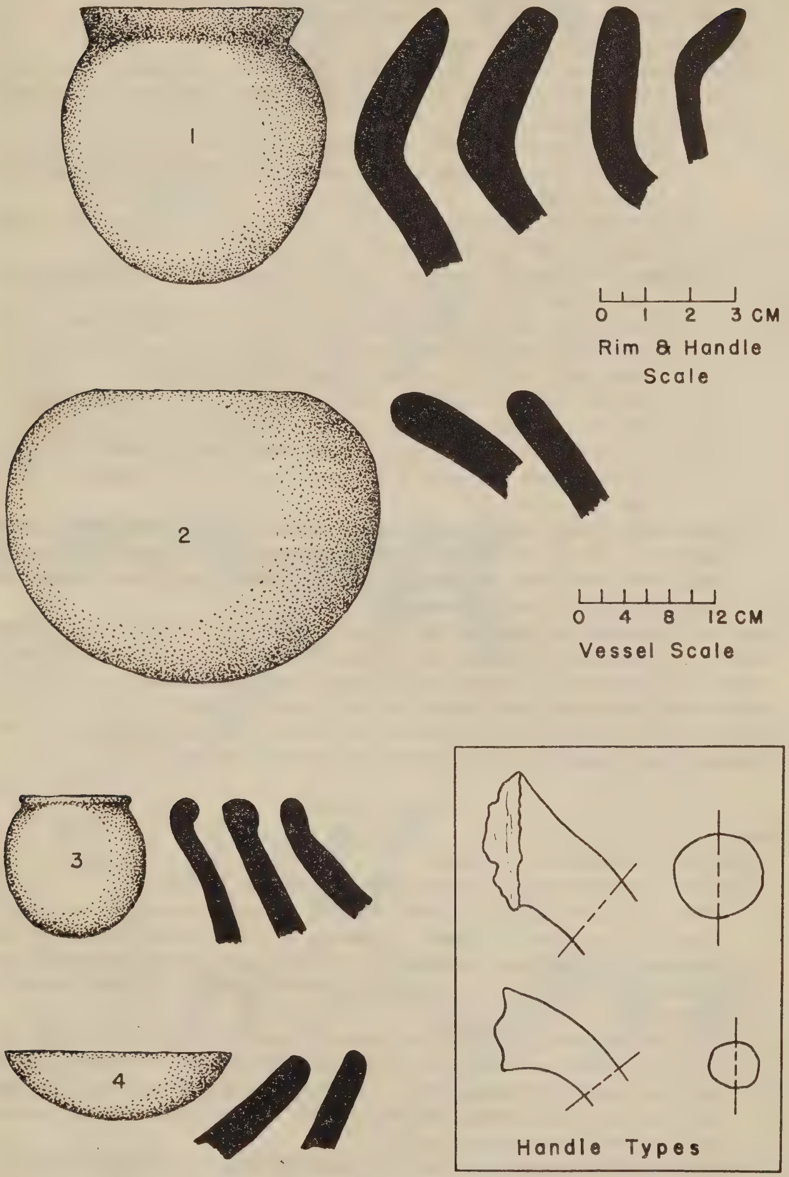
1
0 1 2 3 CM
Rim & Handle Scale
2
0 4 8 12 CM
Vessel Scale
3
4
Handle Types

FIGURE 79.—Rim profiles and vessel shapes of Coroca Plain, Formiga Phase (Appendix, table 35).

FORM:

Rim: Direct, exteriorly thickened or everted, with rounded lip.

Body wall thickness: Range 5–12 mm., majority 7 mm.

Body diameters: Range 22–48 cm.

Base: Rounded on exterior and slightly thickened on interior. A few nontypical bases, flat and with a slight pedestal, come from Site J–4—Mucajá.

Vessel shapes reconstructed from sherds:

1. Jars with rounded body, walls sloping or curving inward to an exteriorly thickened rim with a rounded lip. Mouth diameter 10–38 cm. (fig. 80–1).
2. Jars with globular body, walls incurving to a direct rim with a rounded lip. Mouth diameter 16–30 cm. (fig. 80–2).
3. Jars with globular body and collarlike, everted rim. Rim diameter 18–24 cm. (fig. 80–3).
4. Bowls with rounded bottom, walls curving outward, then nearly vertical to an exteriorly thickened rim with a rounded lip. Rim diameter 12–26 cm., majority 18–26 cm. (fig. 80–4).
5. Rounded bowls with direct rim and rounded lip. Mouth diameter 10–26 cm.; majority 16–26 cm. (fig. 80–5).
6. Bowls with rounded bottom, upcurving sides, expanding slightly at the direct rim with a flattened top. Mouth diameter 20–32 cm. (fig. 80–6).

Appendages: Rarely, loop handles with a circular cross section, 1.2–1.5 cm. in diameter. Ends have a small conical projection for insertion into the body wall but this is smaller than on Ananatuba Phase handles and was of little structural advantage.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Vessel shape 1 appears to increase slightly in frequency and shape 6 to decline, but there are no well-defined trends (Appendix, table 36). Differences in vessel shape preference have an areal rather than a temporal distribution in the Formiga Phase.

CHRONOLOGICAL POSITION OF THE TYPE: Gradual increase in frequency from the beginning to the end of the sequence of the Formiga Phase.

FORMIGA PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: Ground sherd, particles ranging from 0.5–3.0 mm.

Texture: Moderately hard to break owning to tensile strength produced by the hard, smoothed surfaces. Cleavage is very angular and a freshly broken edge is soft and crumbly on the core. Admixture of the clay and temper is poor, with the temper often lumped together, leaving numerous air pockets.

Color: Ranges from a thin band of orange to tan on the polished surface with a light to dark gray core, to an orange band 40 percent of the cross section thickness with a dark gray core. Ten percent of all the sherds are fired light tan to orange through the cross section. The lighter temper particles are often visible in the gray cores.

Firing: Oxidized under extremely variable conditions; usually incomplete. Fire clouds and bright orange splotches are frequent.

SURFACES:

Color: Exterior and interior—Ranges from whitish cream to tan to orange tan to cream streaked with dull, dark red on the polished surface, to dull, orange red or dusty grayish orange on the unpolished surface. All combi-

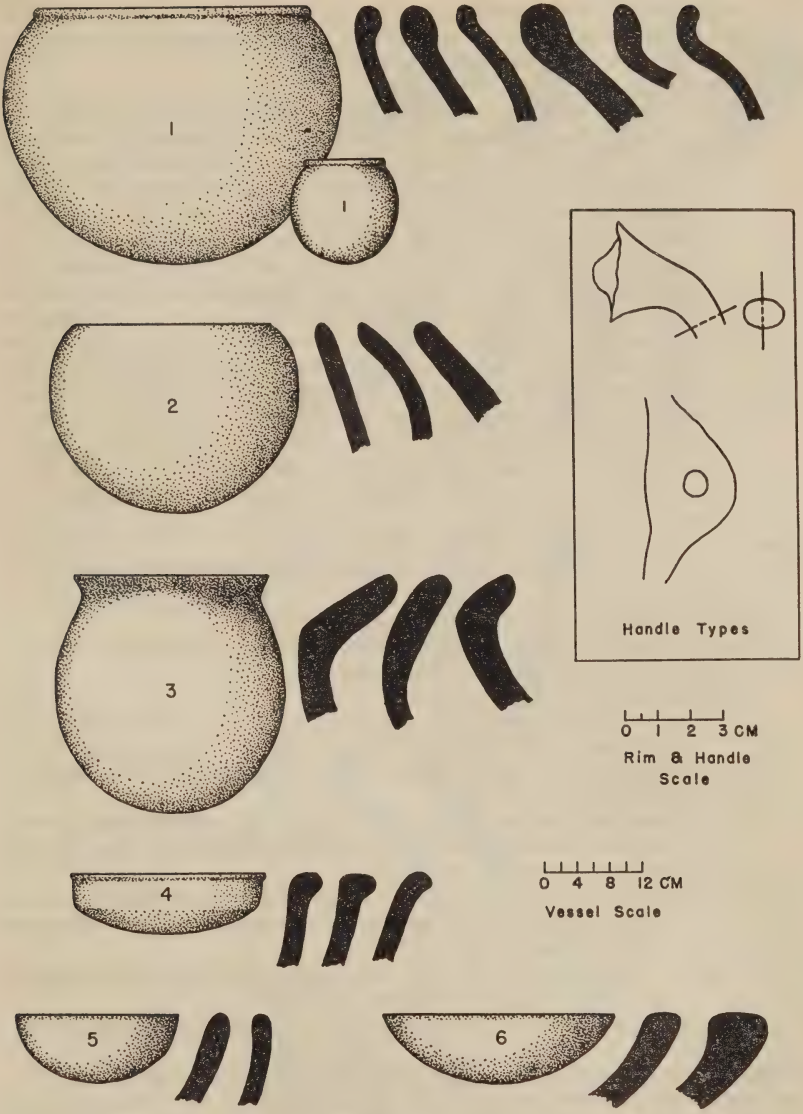
1
1
2
3
4
5
6
Handle Types
0 1 2 3 CM
Rim & Handle Scale
0 4 8 12 CM
Vessel Scale

FIGURE 80.—Rim profiles and vessel shapes of Embaúba Plain, Formiga Phase (Appendix, table 36).

nations and ranges of colors are on both the exterior and interior surfaces, with the whitish cream to cream streaked with a dull, dark red being the most frequent. This streaked color is apparently due to a variation in the amount of pressure applied in polishing the slipped surfaces. Polishing tracks are always reddish because the pressure of the tool removed a slight amount of the whitish or cream slip from this area permitting the orange-red undersurface to show through. A well-polished, evenly smoothed sherd usually has a redder color than the others.

Treatment:

Exterior and interior—75–85 percent of the sherds have a very smooth, slipped or floated surface with a high luster. The rest are unslipped and the polishing is more poorly done, leaving the surface uneven and irregular with smoothing tracks and pits, and producing only a slight luster. Of the highly lustrous, well-polished sherds, half were given a cream slip, reaching 1 mm. in thickness with poor cohesion to the underlying surface so that it flakes off easily. Some surfaces were highly irregular and uneven when the smoothing was begun and the final regularity came as a result of polishing, hence the streaking as the surfaces were worn down. On the floated sherds the surface was worked when wet bringing up a fine layer of clay; these are distinguished by the thinness of the surface layer and its tan-orange color. Ten percent of the jar sherds appear to have been polished only on the rim and neck leaving the body exterior only lightly smoothed. A diagnostic feature of this type is the luster from polishing, even though the surfaces as a whole are not regular.

Hardness: 2.5

FORM:

Rim: Direct, exteriorly thickened or everted with rounded lip; expanding with a flat top.

Body wall thickness: 5–11 mm., majority 7–8 mm.

Bases: Typically rounded and unthickened or slightly thickened; one flat base joining the sides at a 55 degree angle.

Vessel shapes reconstructed from sherds:

1. Bowls with rounded bottom, upcurving sides and expanding rim with a flat top. Rim diameter 18–44 cm. (fig. 81–1).
2. Rounded bowls with a direct rim and rounded lip. Rim diameter 10–30 cm. (fig. 81–2).
3. Bowls with rounded bottom, walls curving outward, then nearly vertically to an exteriorly thickened rim with rounded lip. Mouth diameter 16–30 cm. (fig. 81–3).
4. Small jars with globular body, constricted mouth and slightly everted or exteriorly thickened rim with a rounded lip. Mouth diameter 10–20 cm. (fig. 81–4).
5. Jars with globular body, walls incurving to direct rim with a rounded lip. Mouth diameter 8–20 cm. (fig. 81–5).

Appendages: One fragment of a handle with a circular cross section 1.5 cm. in diameter.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None (Appendix, table 37).

CHRONOLOGICAL POSITION OF THE TYPE: Formiga Plain is the dominant plain pottery type in the early part of the Formiga Phase. It undergoes a steady decline in frequency and has almost disappeared by the end of the Phase.

MUCAJÁ CORRUGATED

The term "finger pinched" might have been more accurately descriptive than "corrugated," but the latter term was chosen because it seems highly probable that this technique represents an effort to copy the appearance of a corrugated pottery type used by another group.

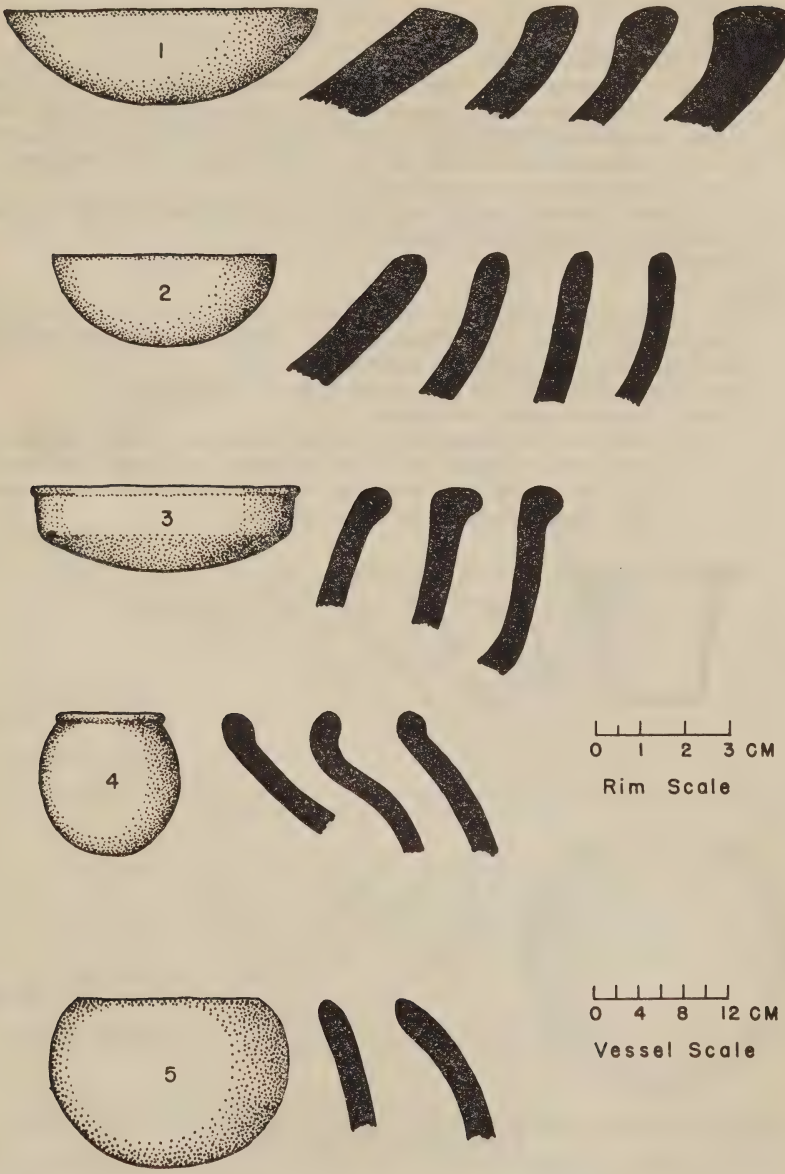
1
2
3
4
5
0 1 2 3 CM
Rim Scale
0 4 8 12 CM
Vessel Scale

FIGURE 81.—Rim profiles and vessel shapes of Formiga Plain, Formiga Phase (Appendix, table 37).

Paste: Always on Embaúba Plain; see that pottery type for descriptions of temper, firing, etc.

Surface:

Color: See Embaúba Plain.

Treatment: Exterior—Coil lines left visible and embellished by pinching horizontally between the thumb and forefinger, creating two large and deep impressions separated by a narrow prominent ridge. An alternative was to press downward along the coil edge making a row of impressions but without the prominent ridge (pl. 48, *a–h*).

Interior—Smoothed sufficiently to erase coil lines, but leaving irregularities and often smoothing tracks.

Hardness: 2.

Form:

Rim: Everted with slight, exteriorly thickened and rounded or pointed lip on the sherds from J–4. Those from J–6 are direct with a rounded lip.

Body wall thickness: 4–20 mm.; majority 6–10 mm.

Base: Flat, joining the wall at an angle of 40–65 degrees.

Vessel shape reconstructed from sherds:

1. Semicylindrical jars or bowls with flat bottom and everted, thickened rim. Rim diameter 16–32 cm. majority 16–18 cm. (fig. 82–1).
2. Jars with rounded body, insloping neck and direct rim with a rounded lip. Mouth diameter 16–18 cm. (fig. 82–2).

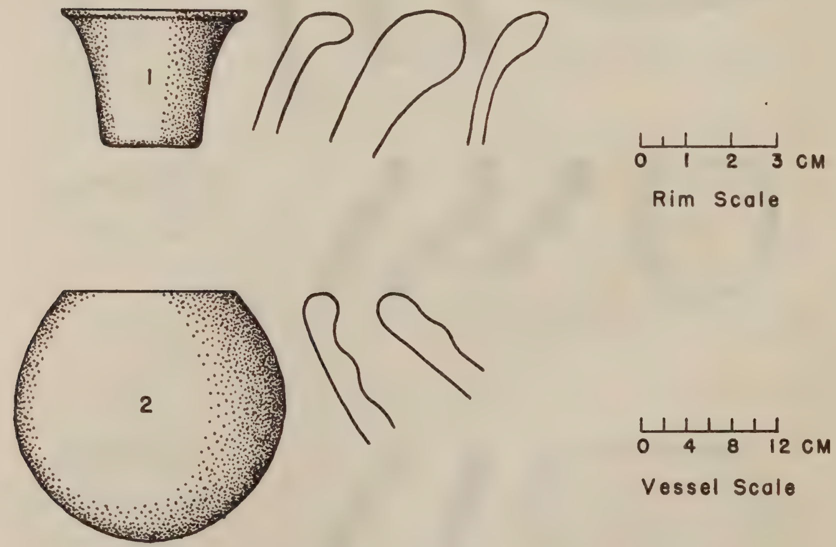

Figure 82.—Rim profiles and vessel shapes of Mucajá Corrugated, Formiga Phase (Appendix, table 38).

Temporal differences within the type: Crudest and least resembling true corrugation at the time of its earliest occurrence in the Formiga Phase. The small sample shows no trend in vessel shape (Appendix, table 38).

Chronological position of the type: Appears suddenly in the latter part of the Formiga Phase sequence.

PSEUDO-SIPÓ INCISED—FORMIGA PHASE VARIETY

PASTE AND SURFACE: The majority are on Formiga Plain, remainder on either Embaúba Plain or Coroca Plain; see those type descriptions for details of paste, temper, color, etc.

FORM:

Rims: Direct or exteriorly thickened with a rounded lip.

Body wall thickness: Range 3–8 mm., majority 6 mm.

Base: Rounded.

Vessel shapes reconstructed from sherds:

1. Bowls with a rounded bottom, sides curving inward to an exteriorly thickened rim with a rounded lip. Rim diameter 24–30 cm. (fig. 83–1).

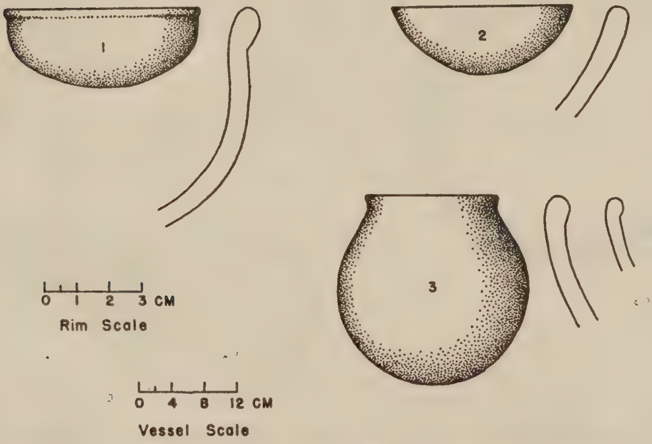

FIGURE 83.—Rim profiles and vessel shapes of Pseudo-Sipó Incised, Formiga Phase Variety (Appendix, table 38).

2. Bowls with a rounded bottom, outcurving sides and direct rim with a rounded lip. Rim diameters average 22 cm. (fig. 83–2).
3. Jars with rounded body, walls insloping to an exteriorly thickened rim with a rounded lip. Rim diameters range 6–20 cm., majority 14–20 cm. (fig. 83–3).

DECORATION (pl. 48, *i-n*):

The incised designs are copies from Sipó Incised of the Ananatuba Phase. (See Sipó Incised, pp. 185–187, for details of technique and motif.)

Motif:

At Site J–6, design types 1, 4, 5, and 6.
At Site J–18, design type 4.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None (Appendix, table 38).

CHRONOLOGICAL POSITION OF THE TYPE: Occurs sporadically throughout the Formiga Phase sequence. The fidelity of the copy of Ananatuba Phase motifs indicates some direct contact with either the Ananatuba Phase or the Mangueiras Phase and serves to compensate somewhat for the absence of a stratigraphic link.

SAÚBA BRUSHED

Paste and surface: On Coroca Plain, see that type description for details of temper, color, firing, etc.

Form:

Rims: Slightly thickened on the exterior or interior with a rounded lip.

Body wall thickness: Range 4–7 mm., majority 4 mm.

Base: Probably rounded.

Vessel shapes reconstructed from sherds:

1. Jar with rounded body, insloping neck and exteriorly thickened rim with a rounded lip. Rim diameter 18–22 cm. (fig. 84–1).
2. Jar with a globular body, walls incurving to a direct rim with a rounded lip. Rim diameter 14 cm. (fig. 84–2).

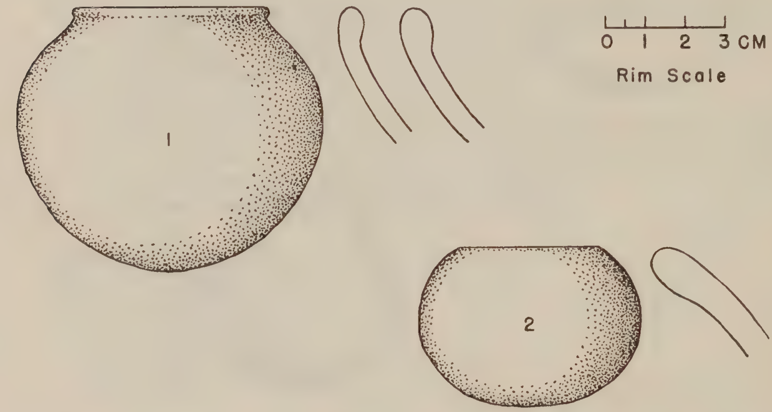

Figure 84.—Rim profiles and vessel shapes of Saúba Brushed, Formiga Phase (Appendix, table 38).

Decoration: Exterior surface covered with parallel brushings typically 0.5–1.0 mm. wide and from 1.0–4.0 mm. apart with the majority 2.0 mm. apart, applied when the clay was damp enough to leave the marks sharply defined. A small percentage were brushed twice with a bunch of twigs held at different angles to produce diagonal or criss-cross patterns.

Temporal differences within the type: None discernible in the small sample available (Appendix, table 38).

Chronological position of the type: Present throughout the Formiga Phase.

UNCLASSIFIED DECORATED

A few scattered sherds with incised or punctate decoration were found at all Formiga Phase Sites. They are tabulated below:

Unclassified incised:

1. Fine-line incised, marks ranging from very fine to 1 mm. wide, usually running parallel, occasionally cross hatched or zigzagged. Total sherds from J–6, 37; from J–18, 1; from J–4, 1.
2. Simple, rectilinear patterns with intersecting straight lines. Total sherds from J–18, 6.

3. Miscellaneous badly eroded or very small sherds with traces of incision. Total from J–6, 15 sherds.

UNCLASSIFIED PUNCTATE:

1. Rows of ovoid punctates beginning below the rim and probably covering the exterior; shape of marks varies greatly on the same sherd, running from triangular to ovoid to rectangular, depending on the angle at which the tool was held. Total from J–6, 3 sherds; from J–18, 6 sherds.
2. Row of punctates along the rim exterior. One sherd from J–6.

Pottery Artifacts

The only pottery artifacts found were two sherds that had been worked into crude disks and perforated through the center, possibly for use as spindle whorls (fig. 77). Both of these came from Site J–6—Formiga (see p. 226 for details).

Nonceramic Artifacts

Artifacts or fragments of stone, bone or other nonpottery material are completely absent.

CERAMIC HISTORY

The seriated sequence shown in figure 85 is based on the analysis of 7,234 sherds from J–4 and J–6 on the north coast and 643 sherds from J–18, in central Marajó. The trends were derived from 4 stratigraphic cuts, 1 in each of the mounds at J–6 and 1 at J–18, the shallowest of which produced sherds to a depth of 60 cm. (Appendix, table 34).

The passage of time in the Phase is marked by changes in the popularity of the three plain wares: Formiga Plain, Coroca Plain, and Embaúba Plain. The earliest level produced only Formiga Plain, a cream to dark-red ware with a lustrous surface. From a climax of 95 percent in the lowest levels of J–6, it declines to 2 percent by the end of the Phase. Taking its place are the unpolished types: Embaúba Plain, with a dull grayish or brownish surface, and Coroca Plain, with a whitish to reddish surface. The latter has an early climax, followed by a slow decline, while Embaúba Plain increases gradually until the end of the Phase. The percentage of Coroca Plain is considerably greater in the lower levels at J–18 than in contemporary levels at J–6, reflecting a regional difference. J–4, a one level site, seriates near the end of the J–6 occupation by virtue of its high percentage of Embaúba Plain.

The decorated types associated with the Formiga Phase are for the most part undistinguished and unclassifiable. Of the two identifiable types, Saúba Brushed is present in nearly all levels at J–6, usually in a fraction of a percent, and is comparable in its execution to the brushed types of the other Tropical Forest Phases. Pseudo-Sipó Incised, so-called because of the similarity of the motifs and technique of incision to Sipó Incised of the Ananatuba Phase, is also found throughout the sequence, although somewhat more sporadically and never exceeding 1.4 percent in any level.

In the final third of the Formiga Phase there is a sudden introduction of a finger-pressed surface decoration that may represent an attempt to imitate the appearance of corrugation. The fact that the earliest as well as the crudest examples of this technique occur at J–4[16] may indicate a stimulus from somewhere to the west. Its introduction at J–6 failed to take root, although the specimens from this site approach true corrugated ware more closely in that the coil lines remain unobliterated.

Another innovation at the end of the history of J–6, and one that probably brought the Phase to an end, is represented by the intrusion of two Marajoara Phase decorated types, Ararí Excised (pl. 49, *a–e*) and Guajará Incised (pl. 49, *f–j*). These appear suddenly at the top of cuts 1 and 2, and are unquestionably of Marajoara Phase origin, probably acquired by trade. Although the exceedingly poor condition of Catarina Plain (which appears about the same time) makes positive identification impossible, there is a good chance that it is in reality badly eroded Inajá Plain, one of the Marajoara Phase plain wares. A few badly eroded sherds from Teso dos China, a Marajoara Phase site, showed similar variegation of gray and orange.

As in the other Tropical Forest Phases, the vessel shapes of the Formiga Phase wares fail to show any well-marked trend of increase or diminution in frequency. In this Phase, the relatively small number of rims makes the situation even more obscure. A computation of the ratio of bowls to jars in the three plain wares shows that 85.7 percent of the Coroca Plain rims are from jars in contrast to 32.4 percent in Formiga Plain. A similar predominance of jars in the more highly oxidized ware is also characteristic of the Ananatuba and Mangueiras Phases. In Embaúba Plain the two categories are more equally represented, with 59.4 percent jars and 40.6 percent bowls.

The most striking aspect of the vessel shapes of Formiga Phase wares is their marked spatial distribution. In Formiga Plain, shape 4 is the dominant jar form at J–4 and J–6 but is absent at J–18 (Appendix, table 37). In Embaúba Plain, J–18 lacks shape 1, which accounts for 40.4 percent of the rims from J–4 and 41.2 percent of those from J–6, as well as shape 6, which reaches 11.2 percent at J–4 and 9.1 percent at J–6. On the other hand, Embaúba Plain, shape 3 is absent at J–6 and rare at J–4, but claims 58.3 percent of the rims from J–18 (Appendix, table 36).

A similar disparity between apparently contemporary Formiga Phase sites is evident in types of decoration. Only J–6 produced

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[16] The trace shown farther down on the chart (fig. 85) is in the level immediately preceding that seriating above J–4, and probably belongs to the end of that level.

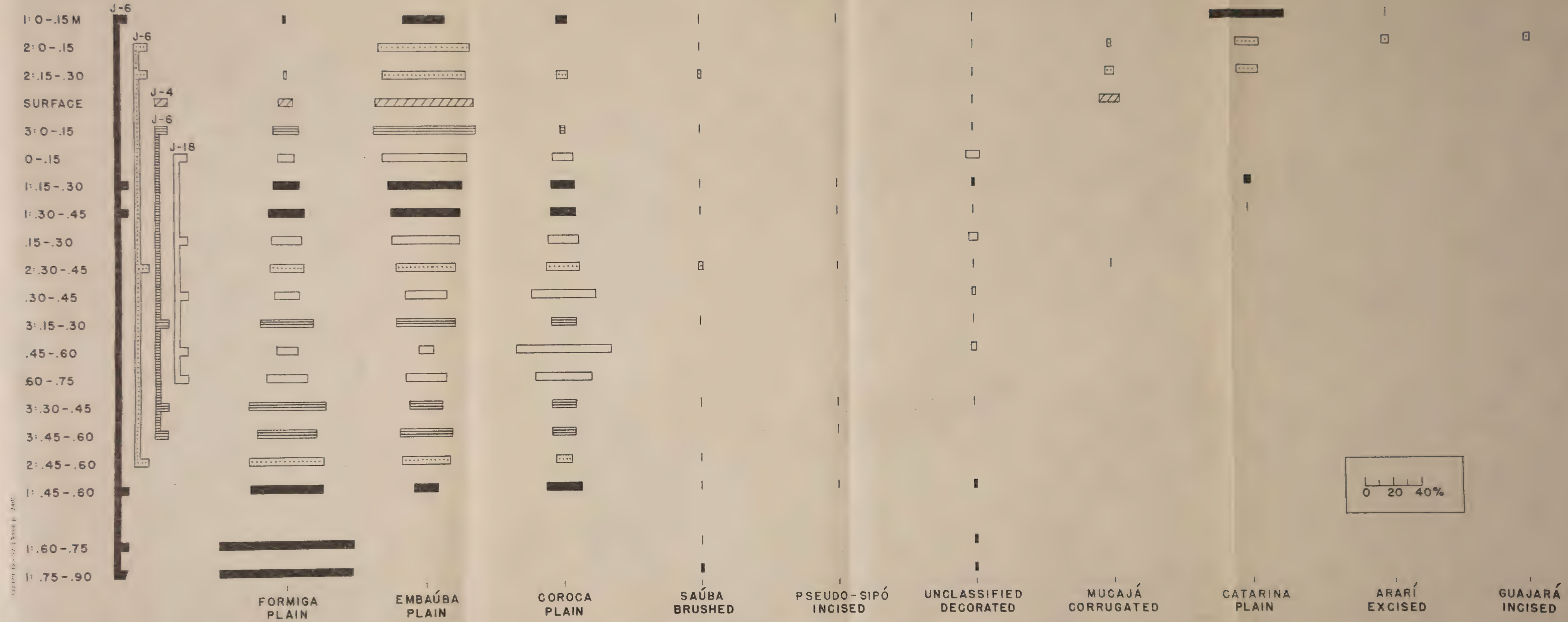

Figure 85.—Seriation of Formiga Phase sites on the basis of pottery type frequency (Appendix, table 34).

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Saúba Brushed and Pseudo-Sipó Incised, although these occur in the earliest levels and so should have had ample opportunity to diffuse to J–18. Since innovations of this type passed rapidly between equally widely separated sites of the Mangueiras Phase, it seems reasonable to conclude that Formiga Phase villages were relatively more isolated and perhaps also less receptive to ceramic innovations than were those of the Mangueiras Phase.

The presence of a decorated variety employing the motifs of Sipó Incised of the Ananatuba Phase is susceptible to an interpretation similar to that given for Pseudo-Sipó Incised in the Mangueiras Phase (pp. 218–219). The Formiga Phase variety of Pseudo-Sipó Incised appears to be another and perhaps independent example of ceramic acculturation. The exact origin in time or place is uncertain since no sites showing Formiga Phase-Ananatuba Phase contact similar to the Mangueiras Phase-Ananatuba Phase contact at J–7 were located, and the type is present in the earliest known levels of the Formiga Phase. However, in contrast to what happened in the Mangueiras Phase, the ceramic influence appears to have been purely local, since no Pseudo-Sipó Incised sherds were collected from J–4 or J–18.

DIAGNOSTIC FEATURES OF THE FORMIGA PHASE

A typical Formiga Phase village was located in the *campo* but accessible to the forest, and adjacent to a stream. At J–4 and J–6, this was a small *igarapé*, large enough to provide a water supply but too small to be navigable except in the rainy season. The sites consist of 1 to 6 independent mounds, which at J–6 are produced by the refuse accumulation, but at J–4 and J–18 have an artificially constructed core. The mounds at J–4 cover a considerably larger area and are individually larger than those at J–6, but the refuse deposit has a depth of only 10 cm. in contrast to almost a meter at J–6. The presence of a few lumps of clay bearing twig impressions may indicate the use of wattle and daub in the house construction.

All three of the habitation sites are contemporary, as shown by the interdigitation of the levels in the strata cuts, with J–6 covering the longest span of time and J–4 much the shortest. The ceramic history is characterized by the decreasing frequency of Formiga Plain, a lustrous ware with a streaked surface, an early climax and gradual decline in Coroca Plain, with a whitish to reddish surface, and an increase on the part of Embaúba Plain, with a dull grayish to brownish surface. Decoration is typically crude and nondescript, the only consistent types being Saúba Brushed and Pseudo-Sipó Incised and these are present from beginning to end with no notable change in frequency. Ceramic artifacts are limited to two worked and drilled sherds that may have been spindle whorls.

The burial pattern seems to have been cremation and interment of the ashes beneath the house in the village refuse. One such burial was encountered in J–6, cut 2, at a depth of 45 cm. No grave goods of any description were associated.

The inception of the Formiga Phase is uncertain, but its termination is apparently the result of the arrival of the Marajoara Phase, whose people came in contact with the village at J–6 just before it was abandoned.

THE ARUÃ PHASE

Description of Sites and Excavations

In spite of the prominence of the Aruã in historical accounts of Marajó, only two village sites were found on the north-central coast.

SITE J–2/3—CHAVES AIRPORT

In 1943 a small emergency landing field was constructed on the southeast edge of the town of Chaves, on the north coast of Marajó (fig. 86). Leveling operations removed 50 to 75 cm. of earth and uncovered 18 plain jars containing bone fragments about 25 cm. below the surface. The townspeople recalled that all were broken or so fragile that they fell into pieces when removed from the supporting earth. We were unable to discover a single sherd in any one's possession in 1948. A small, ungrooved ax found at the same time was still preserved.

Examination of the site revealed scattered sherds on the surface at the north and south edges of the field, which were about 60 meters apart. The original surface of the ground averages 25 cm. above the field level along the north edge and 50 to 75 cm. higher on the south edge. The fact that the refuse layer averages 25 cm. in thickness at both extremes, together with the information that jars were found in the intervening area, seems to justify the conclusion that we are dealing with the two parts of a single large habitation site. The refuse layer was dark-gray, sandy loam, with the sherds concentrated between 20 and 25 cm. below the surface. Flecks of charcoal were noted at 15 cm. on the north side. Excavation was carried out by cutting back the north bank 1.5 meters inward along a section 13 meters long, and by peeling off the south bank in a strip 30 meters long and 1 meter wide. One hundred and fifty-four sherds from the north side and 741 from the south excavation give a total of 895 sherds from the site.

In 1948 the north edge of the site was only 100 meters from the coast, where the steep, high bank is subjected to continual erosion by the waves. At the time the village was occupied the shoreline can be said with certainty to have been somewhat farther away. The entire area was wooded prior to its clearing for the airstrip.

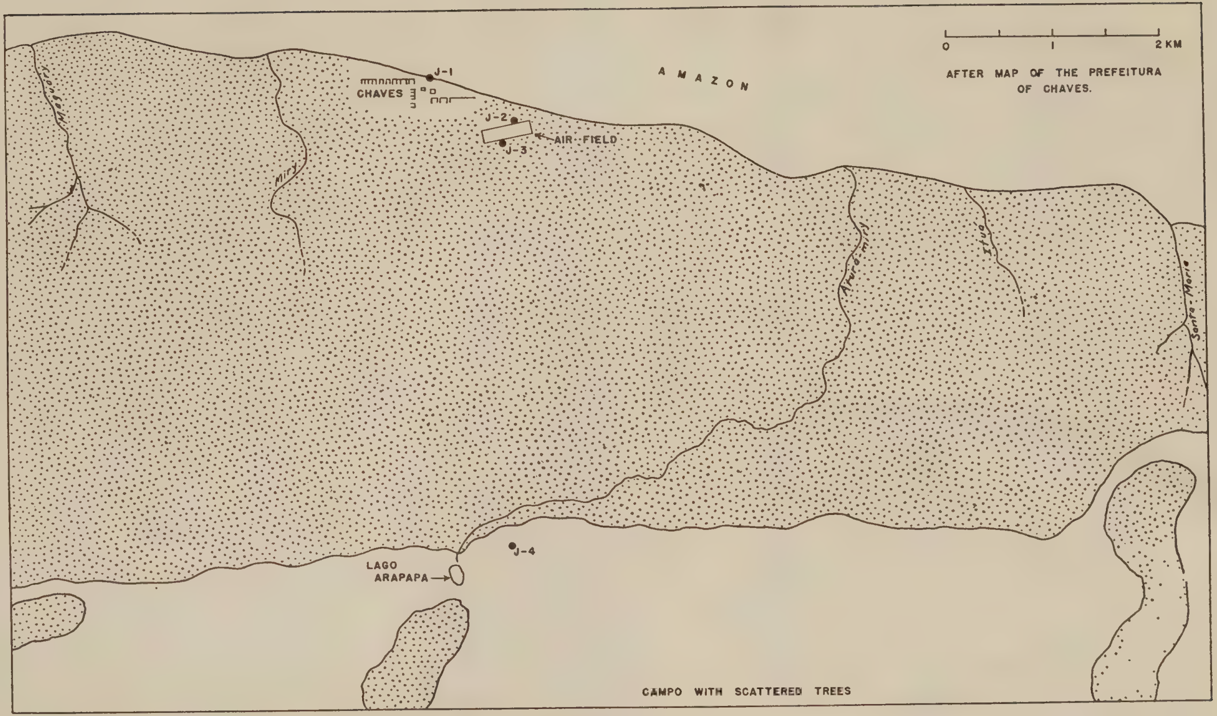
0
1
2 KM
AFTER MAP OF THE PREFEITURA OF CHAVES.
AMAZON
J-1
CHAVES
J-2
J-3
AIR-FIELD
J-4
LAGO ARAPAPA
CAMPO WITH SCATTERED TREES
Mocoory
Miry
Atura-miry
Itua
Santa-Maria

FIGURE 86.—North coast of Marajó Island in the vicinity of Chaves, showing the locations of J–2/3—Chaves Airport and J–4—Mucajá. (J–1 produced no aboriginal materials.)

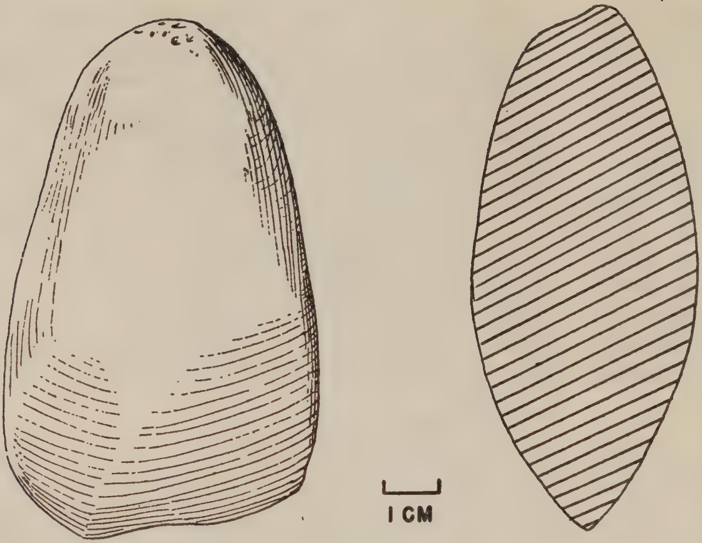

Figure 87.—Stone ax from J–2/3—Chaves Airport, a habitation site of the Aruã Phase.

Ax.—The only nonceramic artifact from J–2/3 was an ungrooved, polished ax (fig. 87) of fine-grained, dark-greenish diorite flecked with black. Several polishing planes toward the blade and the sides and a few pecking marks at the butt end make the surface slightly irregular. The ax is 9.0 cm. long and 5.6 cm. wide at the convex blade, with curving sides and a rounded butt. Thickness is 3.7 cm. The blade was chipped in the center during use.

SITE J–11—CARMO

A small habitation was located on the east bank less than a kilometer above the mouth of the Igarapé do Carmo, a small stream emptying into the north coast of Marajó several kilometers east of the town of Chaves (fig. 48). The land in this area is comparatively high and there are no surface indications of village refuse. Discovery was made by the *caboclos* because of sherds once exposed in the bank of the *igarapé* after a heavy rain. The coastal fringe of forest covers the region and the site was overgrown with cane and spiny palms, but no large trees were close to the excavation. A cut 1.5 meters square was begun about 8 meters in from the *igarapé*, but the sherds were so sparse that it was enlarged on all sides in an effort to secure a more adequate sample. There was no soil discoloration from habitation, the color throughout being light gray. The sherds were 12 cm. below the surface and the soil above them was densely compacted with roots.

Refuse was extremely sparse, even in comparison with other sites of the Aruã Phase, and only 28 sherds were obtained.

Data from Other Investigations

Survey and excavation on the Islands of Mexiana and Caviana produced a large number of Aruã sites, both habitations and cemeteries. Additional sites were found in the Territory of Amapá. Details of these are given on pages 37–41 and 457–524.

Analysis of Materials

Since the vast majority of the cultural remains came from the Islands of Mexiana and Caviana, the pottery and other artifacts have been analyzed and described on pages 525–534.

Ceramic History

A seriation of the Aruã habitation sites based on vessel shape places J–2/3 and J–11 in the lower part of the sequence. For details, see pages 534–537.

Diagnostic Features of the Aruã Phase

The Marajó sites are typical of Aruã Phase village sites both in location and composition. Notable, however, is the absence of any report of cemeteries of the type associated with the Phase on Mexiana and Caviana. For a general summary of the Phase see page 538.

COMPARISON AND INTERPRETATION OF THE TROPICAL FOREST PHASES, WITH A METHOD FOR COMPUTING VILLAGE DURATION

By their lack of standardization in shape, their simplicity or absence of ornamentation and their exclusively utilitarian purpose, the ceramics of the Ananatuba, Mangueiras, Formiga, and Aruã Phases evoke the image of a level of cultural development where technology was competent to remove the concern with subsistence from the position of immediate urgency it occupies among Marginal hunters and gatherers, but not yet able to assure reliable and constant production of a surplus that would permit the technological elaboration and the social and religious development attained by the advanced cultures of aboriginal South America. The size and composition of the habitation sites indicate small, scattered villages. All of these traits are descriptive of living tribes of the Tropical Forest culture area, and it is probable that the extinct Phases resembled the living tribes in other aspects of their culture as well: that they made and used baskets, mats, hammocks and canoes; that the sociopolitical unit was the extended family or clan, with a chief whose duties and powers were limited; that full-time specialists and social stratification were absent; that religious observances were primarily of a shamanistic character; that crisis rites included the couvade at birth and ordeals at puberty.

Although there is ample justification for assigning these four archeological Phases to the Tropical Forest culture pattern, it does not follow that they were any less distinctive in particular features than are an equal number of living Tropical Forest tribes. Although settlement pattern and ceramic traits are never used as the primary means of differentiating living tribes, where they are overshadowed by more striking social and religious differences, these are the only aspects of the culture that remain to the archeologist and when examined closely they prove to be equally varied. For many of the historical problems the archeologist hopes ultimately to solve, a complete ceramic definition of the culture is sufficient to provide the pertinent data, and a reconstruction of the total culture is not required. However, the description of the Ananatuba Phase in terms of firing, surface finish and incised designs of the pottery conveys no image of the sort we are accustomed to evoke when speaking of a living society. It provides no basis for comparison with the cultures on the ethnographic level. It is a name in the archeological sequence and nothing more.

In the hope of adding to the Phase definitions and revealing their individuality more clearly, an extensive examination was made of the only nonceramic data available, the location and composition of the sites themselves. A difference in settlement pattern was immediately evident. For example, the Ananatuba and Mangueiras Phase sites are alike in two features: they both occur in the forest rather than the *campo*, and they are not on the immediate coast. The Mangueiras Phase people, however, emphasized closeness to a navigable stream, whereas in the Ananatuba Phase proximity to the *campo* was more important. The Formiga Phase is distinct from the previous two in its choice of a *campo* location, while the Aruã Phase sites are typically in the forest on the shore of a good-sized *igarapé* or on a smaller one not far from its junction with the coast.

These differences in village location are likely to be associated with differences in less tangible aspects of the culture, especially as they relate to the subsistence resources. For instance, it might be suspected that the Aruã were dominantly riparian, placing greater emphasis on the watercourses for food and transportation than the Ananatuba, with their immediate accessibility to both forest and *campo*. A difference in mobility, also suggested by the Aruã emphasis on coastal and inland water routes and the Ananatuba Phase avoidance of the same, is borne out by estimates of village permanency.

No trace was found of postholes, which are usually relied on by archeologists to give information on house type. However, the assumption that pile dwellings were used is likely to be correct, since it is derived from the fact that sites are located on slight natural rises, poorly drained and muddy during the rainy season, and from characteristics of the refuse accumulation. Slight historical corroboration is found in accounts of the existence of such structures in the area in the 16th and early 17th centuries (Nordenskiöld, 1920, p. 7). Another clue to house construction comes from the finding of fragments of clay with stick impressions in sites of the Formiga and Ananatuba Phases, suggesting the use of mud-plastered walls. Nordenskiöld (op. cit., p. 3) reports this wall-type used by Indians around Roraima in Guiana, as well as from more remote parts of Colombia and Bolivia. He was uncertain as to whether it was an aboriginal or European-introduced technique but our evidence suggests the former conclusion may apply to the mouth of the Amazon.

There are several features of the sites that suggest differences in village composition. Unfortunately, there is no information about the type of refuse accumulation associated with different house types and village arrangements in existing Tropical Forest settlements so that the interpretation of the archeological situation must depend on reasoning that seems logical but cannot at the moment be supported by ethnographic facts.

Two basic types of village organization are found among Amazonian tribes today: (1) one or more large, communal dwellings, and (2) a cluster of separate family houses arranged in a circle or in one or more rows. On the one hand, the population is concentrated in one or more spots; on the other, it is spread out. Theoretically, these differences should result in differences in refuse accumulation. In a communal house, there is an approximately even distribution of living over a continuous floor area. Assuming that the average rate of breakage of ceramics over a period of time was constant for the different families occupying the house, and that the sherds were swept or dropped through the floor, they would accumulate in the protected area beneath the house. They would not be further broken by being kicked about or trampled on by the occupants or mixed with more dirt than filtered through the house floor or was deposited as silt during an exceptionally heavy rainy season. In other words, the midden should have the characteristics observed at the Ananatuba Phase sites: a relatively small, generally round or oval area with the sherds thickly concentrated and comparatively large. The use of a communal house in the Ananatuba Phase can be checked by comparing the site area to the dimensions of modern Tropical Forest communal houses. Those of the Tupinambá measure 75 to 90 meters long by 9 to 15 meters wide, and house 100 to 200 individuals. Since Ananatuba Phase sites are smaller (table E), the population of an average Ananatuba Phase village may be estimated as not exceeding 150.

In the second type of village pattern, the individual houses are set at various distances from each other. They may or may not be provided with walls, but in either case the exit is readily accessible. If the assumption can be made that the path of least resistance would be to toss the sherds from a broken vessel out on the ground (as is done by *caboclos* today), they would become scattered in the surrounding area. Children playing would kick them about and adults walking through the village would step on them and break them into smaller pieces. Disintegration of old houses and construction of new ones would change the arrangement and allow the refuse to accumulate evenly over the habitation area. Exposure to these conditions, as well as to weathering from sun and rain would spread the sherds about and mix them in the dirt. If the same rate of breakage obtained as in the first type of village and the populations were of comparable size, we would expect the sherds to be scattered over a wider area, to be generally smaller, sparser, and mixed with a greater quantity of dirt.

Mangueiras Phase villages are typically five times larger in area than those of the Ananatuba Phase. However, two facts suggest that this does not represent a difference in house type, but rather a difference in village size. The density of the sherd refuse is quite similar to that in Ananatuba Phase villages, with an average of 606 sherds per 15-cm. level at J–13 as against an average of 650 per 15-cm. level at J–10. In one Mangueiras Phase site, C–3—Porto Real, the sherds are even more concentrated than in any site of the Ananatuba Phase. Furthermore, the area occupied by C–3 is smaller than that typical of Ananatuba Phase villages, and is too small to represent anything but a communal type of house. Since it is unlikely that this one village would have an untypical house type, it can be concluded that communal houses are also characteristic of the Mangueiras Phase. The larger area covered by the refuse at most sites suggests that typical villages were composed of several such houses, representing a considerably larger population than was characteristic of villages of the Ananatuba Phase.

Turning to the Aruã Phase, we find that the area of the site averages only 154 square meters, except in three exceptionally large sites covering over 1,000 square meters (table G). The smaller area would not allow enough room for houses of the individual family type, and probably indicates that the Aruã villages were typically composed of a single communal house like those of the Ananatuba Phase, but only one-fourth to one-half as large. This interpretation of the Aruã can be checked to some extent ethnographically. Archeology shows that the Aruã migrated to the Islands of Mexiana, Caviana, and Marajó from Brazilian Guiana. Linguistically, they have been identified by one authority as Arawak (Nimuendajú, 1948 b, p. 195). This being the case, it is probable that the Aruã villages on the islands were not greatly different from those in the Guianas in more recent times. In characterizing them, Gillin (1948, p. 829) says, "Relatively small settlements, seldom if ever containing more than 200 individuals, oftener 30 to 40, are the rule. . . ."

Extension of this analysis to the Formiga Phase runs up against several complicating factors. The upper levels of the 3 mounds at J–6 were subjected to much greater damage by erosion and other destructive agencies than the lower levels, which softened and broke the sherds into smaller pieces and materially increased the count per level. At J–4 the mounds are larger and more numerous, but the refuse layer is only 10 centimeters thick as compared with a maximum of 90 cm. at J–6. The greatest difference between the refuse deposits here and those of the other Tropical Forest archeological Phases is the accumulation of sherds in several independent spots with sterile areas between them, rather than in one continuous area. Why this should be the case is not clear. There is evidence at J–4 and J–18 that the mounds were artificially constructed and then lived upon, but at J–6 the refuse deposit extends to the bottom of the mound, indicating that it is purely a midden accumulation. These differences in the known Formiga Phase sites prevent a simple characterization of the village pattern. In regard to house type, the small area occupied by many of the mounds (table H) and the association of several mounds in a small village area suggests that communal houses may have been used in this Phase also.

When it comes to the question of assigning dates or durations to these Marajó Phases, new difficulties emerge. None of the existing methods of absolute dating for archeological sites are applicable in the Amazon area, and there is little prospect of a new method being developed that can overcome the handicaps of rapid and complete disintegration of all but the ceramic remains. Prodding by the layman, who always asks, "How old is it?", as well as their own desire to give the reconstructed sequence of cultures some point of reference in time as well as in space, leads archeologists to search for some means of estimating the relative duration of sites and cultures. This must often be based on "feeling for the material" acquired by intensive study, because of the absence of any standard for correlating a certain amount of ceramic change with a given span of years. In the hope of achieving some more objective basis for estimating the relative durations of the Tropical Forest Phases on Marajó, the refuse conditions in the sites were subjected to an analysis that resulted in the following interpretations.

The first aspect of an archeological site that strikes one as likely to be of temporal significance is the depth of the refuse deposit. If the refuse at Site A is 2 meters deep and that at Site B only 1 meter deep, Site A may be supposed to have been occupied for a longer period of time than Site B. While this may seem true in theory, it is an unreliable yardstick in practice. Many variable and often accidental factors enter into the composition of a refuse deposit, and comparative stratigraphy has shown that a shallower deposit may actually represent a longer period of time than a deeper one (Ford, 1951, p. 94 and fig. 36). A communal house is likely to give a different rate and density of refuse accumulation than a village of scattered, individual houses. Another possible source of error exists when the refuse deposit is a special area set aside by the village inhabitants rather than a gradual accumulation over the village itself.

Prone to error as refuse accumulation appears to be as a basis for estimating relative duration of sites, it is the only method that can at present be applied to Amazon archeology. Used within a single geographical region, limited to cultures of comparable level of development, and shorn of the accidental variations just mentioned, it is possible to avoid some of the major pitfalls and to arrive at estimates that should give at least an approximation of relative duration.

The four cultural Phases under discussion all appear to be typical representatives of the Tropical Forest culture pattern. Thus, it is likely that a similar average rate of breakage pertained in the different Phases and at different times in the same Phase. If this assumption may be accepted as valid, then the sherd accumulations can be regarded as a constant among the variable features in the growth of the midden deposits. In estimating the relative duration of sites within a Phase or between Phases, the basis will be therefore the total number of sherds present in a sample of standard area rather than the relative depth of the total refuse deposits.

The dimensions of the refuse area selected as the basis for computing the rate of sherd accumulation depend primarily on convenience. If all the stratigraphic excavations had been the same size, that figure would have been chosen. Unfortunately, however, three sizes are represented: 1 by 1 m., 1.5 by 1.5 m., and 2 by 2 m. The middle figure was arbitrarily selected as the standard and the sherd counts of the smaller and larger excavations were adjusted to this standard area in the following manner. The area encompassed by a cut 2 by 2 m. is 4 times greater than in one that is 1 by 1 m. The area of a 1.5 by 1.5 m. cut is 2.25 times greater than that of a 1 by 1 m. cut. To adjust the sherd total from a 2 by 2 m. excavation to the standard for 1.5 by 1.5 m., the total was first divided by 4 (which reduced it to the equivalent of a 1 by 1 m. cut) and then multiplied by 2.25 (which increased it to the equivalent of a 1.5 by 1.5 m. cut). For excavations of 1 by 1 m., multiplication of the sherd total by 2.25 was the only step needed.

One exception was made to the rule that the total sherd count from an excavation of standard 1.5 by 1.5 m. area was used to derive the site duration. This was J–7—Sipó, which began as an Ananatuba Phase village and later received a Mangueiras Phase influence, apparently consisting of the invasion and cooccupation of the site by people of the Mangueiras Phase. Since it is of interest to know how long the village lasted prior to this event and how long it survived thereafter, the levels with Ananatuba Phase pottery only were calculated separately from those with both Ananatuba Phase and Mangueiras Phase sherds. As it happens, this division occurs in the middle of each cut, the lower 2 levels of cut 1 and the lower 3 levels of cut 2 representing the exclusively Ananatuba Phase occupation, and the upper 2 levels of cut 1 and the upper 3 levels of cut 2 the combined Ananatuba Phase-Mangueiras Phase period (Appendix, table 21).

Having decided upon a standard area of excavation, the next step was to select a standard density of sherds. The concentration of pottery in the village sites of the Ananatuba and Mangueiras Phases is remarkable. The 2- by 2-m. square cut at the Ananatuba Phase site of J–9 produced 4,596 sherds, and there is no reason to believe that such a density is not typical of the site as a whole. The possibility that we are dealing with a special dump heap rather than a habitation accumulation is unlikely since such systematic refuse disposal is not found among living tribes of the Tropical Forest culture. Furthermore, similar high densities occur at other habitation sites of these Phases.

Before assigning a duration for the accumulation of this amount of refuse, an attempt was made to find out what rate of accumulation was recognized in other areas of the New World with similar levels of cultural development in pre-European times. The most obvious comparison is with the Southeastern United States, where run-of-the-mill settlements were small and scattered like those of the Tropical Forest. The information needed for this kind of analysis is rarely given in reports on Southeastern sites, but one interesting example is provided by Willey. In his discussion of Mound Field, in Wakulla County, northwest Florida, he remarks that "Pit I . . . had a total of 4,789 sherds, an amazing number from an excavation three meters square and less than one meter deep" (1949 a, p. 60). Like the sites of the Ananatuba Phase, the Mound Field site is "small in extent and probably represents only a small population" (ibid.). The ceramic analysis showed it to have been occupied from early Santa Rosa to late Swift Creek times, estimated as from A. D. 900 to 1200 (op. cit., figs. 14 and 20). This estimate of 300 years of uninterrupted occupation may be too high, but it seems reasonable to assume that the accumulation at J–9, which contained only 193 fewer sherds (i. e., 4,596) in a cut less than one-half the area and only three-fourths the depth of that at Mound Field, must indicate a long period of residence. It is inconceivable that such a sherd accumulation could have been built up in less than 100 years, and if there is a gross error, it is likely to be on the conservative side. However, the primary goal is to provide a basis for deriving relative rather than absolute duration, and for this purpose the figure of 100 years can be considered as the equivalent of 100 percent. A site producing half the number of sherds from the standard area will thus be interpreted as having lasted half as long, although this may represent an actual duration of either more or less than 50 years.

When the sherd totals per strata cut were reduced or increased to agree with the results to be expected from a standard 1.5 by 1.5 m. excavation, the site with the largest sherd total turned out to be J–10 with 2,600 sherds from cut 1. This is 20 more than the excavation at J–9, which was compared above to Willey's Mound Field, and is preferable to the total from J–9 because it is a round number. A further advantage to J–10, cut 1 is that it was excavated in the dimensions now being used as the standard size and did not have to be converted. Using this sherd count as the unit of measure gives the formula:

$$2{,}600 \text{ sherds per } 1.5 \times 1.5 \text{ m. area} = 100 \text{ years.}$$

It should be emphasized that this formula for the rate of sherd accumulation is designed specifically for refuse deposits associated with houses of the communal type. Since there is reason to believe that the rate of accumulation may vary with house type, care should be taken in using it where houses of the individual family type seem indicated by the area and density of the refuse deposit.[17]

The application of this formula to the sherd totals per standard cut of 1.5 by 1.5 meters from sites of the Ananatuba Phase gives estimates of village duration ranging from 4.9 years at J–8 to 147.7 years at J–7, Mound 2. However, J–8 is the only village with a duration of under 98.9 years (table E).

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[17] This interpretation is illustrated by sites of the Mazagão and Aristé Phases in the Territory of Amapá. In both of these the habitation area is larger than in any of the sites on the islands, ranging from 4,160 to 6,600 square meters in the Mazagão Phase and occupying 7,854 square meters in the Aristé Phase. The sherd density is very low, however, totaling on the average under 150 sherds per 15-cm. level at A–2 in contrast to over 650 per 15-cm. level in sites of the Ananatuba and Mangueiras Phases. This dispersed site area and scattered distribution of sherds fulfills the characteristics deduced as correlated with villages of individual family houses (p. 248), and the application of the communal house formula is invalid. For results of the use of this formula in the Acauan Phase, see pp. 455–456.

TABLE E.—*Duration of Ananatuba Phase village sites*

Site number and size of original strata cut	Site dimensions	Site area (sq. meters)	Total sherds from the cut	Sherds per standard cut of 1.5×1.5 m.	Estimated duration in years
Ananatuba Phase					
J-7:					
Mound 1, cut 1 (2×2 m.)	30 m. diam.	706	818	460	17.7
Mound 2, cut 2 (2×2 m.)	35×22 (?) m.	770+	4,560	2,568	98.9
J-8 (1.5×1.5 m.)	30 m. diam.	706	127	127	4.9
J-9 (2×2 m.)	20 m. diam.	314	4,596	2,580	99.2
J-10 (1.5×1.5 m.)	10×50 m.	500	2,600	2,600	100.0
Mangueiras Phase mixture with Ananatuba Phase					
J-7:					
Mound 1, cut 1 (2×2 m.)	30 m. diam.	706	2,149	1,210	46.6
Mound 2, cut 2	35×22 (?) m.	770+	2,243	1,265	48.8
Total duration of J-7					
Mound 1, cut 1					17.7+46.6=64.3
Mound 2, cut 2					98.9+48.8=147.7

This is an unparalleled degree of permanency for villages of the Tropical Forest Pattern, as attested by the ethnographical evidence (p. 21), but since the formula was designed to err on the conservative side there seems to be no way to avoid attributing this duration to the Ananatuba Phase sites. If anything, they may have been occupied considerably longer. A similar degree of village permanency appears to have existed in the Mangueiras Phase. The formula here gives a range from 10.3 years at J–17 to 118 years at J–5 (table F). Of the 5 pure Mangueiras Phase sites, 2 lasted more than 100 years and 2 less than 25 years.

TABLE F.—*Duration of Mangueiras Phase village sites*

Site number and size of original strata cut	Site dimensions	Site area (sq. meters)	Total sherds from the cut	Sherds per standard cut of 1.5×1.5 m	Estimated duration in years
J-5 (1×1 m.)	(3 mounds)	3,000	1,379	3,100	118.0
J-7:					
Mound 1, cut 1 (2×2 m.)	30 m. diam.	706	2,149	1,210	46.6
Mound 2, cut 2 (2×2 m.)	35×22 (?) m.	770+	2,243	1,265	48.8
J-13 (1.5×1.5 m.)	30×75 m.	2,250	3,031	3,031	116.0
J-16 (1.5×1.5 m.)	70 m. diam.	3,848	599	599	23.0
J-17 (1.5×1.5 m.)	150×50 m.	7,500	268	268	10.3
C-3:					
Cut 1 (1×1 m.)	25 m. diam.	492	969	2,180	84.0
Cut 2 (1×1 m.)	25 m. diam.	492	743	1,672	64.5

The high degree of village permanency exhibited in these two early Phases is in strong contrast to the situation in the Aruã Phase. Here the depth of the refuse deposit was insufficient to permit stratigraphic excavation and the calculation of the sherd count per 1.5 by 1.5 meter area is derived from information on the exact area covered in making the sherd collections and test excavations. The results show that the 10 Aruã villages for which data are available were occupied for periods ranging from 1 to 19.2 years (table G). Half of these lasted more than 12 years and half less than 12 years. The latter figure encompasses the known durations of modern villages in the Guiana area from which the Aruã are immediately derived, and suggests that the estimates may have some validity.

TABLE G.—*Duration of Aruã Phase village sites*

Site number	Site dimensions	Site area (sq. meters)	Total sherds from the tests	Sherds per standard cut of 1.5×1.5 m.	Estimated duration in years
J-2/3	100×50 (?) m.	5,000	895	?	
J-11	(Very small)		28	28	1.0
M-7	15 m. diam	177	151	?	
M-2	15 m. diam	177	1,024	500	19.2
C-5	12 m. diam	113	606	300	11.5
C-6	15×75 m.	1,125	809	500	19.2
C-7	7×20 m.	140	607	455	17.5
C-8	8×20 m.	160	646	260	10.0
C-10	20×75 m.	1,500	315	150	5.7
C-13	30×10 m.	300	724	371	14.2
C-14	15×10 m.	150	525	392	15.1
C-15	5 m. diam	19	126	38	1.4

When the formula is applied to sites of the Formiga Phase, some of the variable, external factors affecting its reliability are brought out. There is a great difference between the durations derived for the 3 mounds composing J-6, ranging from 20.1 to 170 years (table H). A similar difference in duration is suggested by the seriation of the stratigraphic excavations in these 3 mounds (fig. 85). However, the mound covering the greatest span of time in the seriation is cut 1 (Mound 1), whereas the calculation of duration gives the maximum span to cut 3 (Mound 2). Examination of the field notes suggests an explanation for this discrepancy. The condition of the sherds from cut 3 was poorer than from the other 2 mounds, the erosion of the surfaces being so advanced that the sherds were thin and fragile. The result was a high rate of fragmentation under the pressure of cattle, root action, and similar external forces after abandonment of the site. This produced a sherd count per 1.5 by 1.5 meter area that is very

TABLE H.—*Duration of Formiga Phase village sites*

Site number and size of original strata cut	Site dimensions	Site area (sq. meters)	Total sherds from the cut	Sherds per standard cut of 1.5×1.5 m.	Estimated duration in years
J-4:					
Main mound (2×2 m.)	100×20 m.	2,000	929	523	20.1
J-6:					
Mound 1, cut 1 (2×2 m.)	60×8 m.	480	3,365	1,895	73.0
Mound 3, cut 2 (2×2 m.)	18 m. diam	254	981	553	21.3
Mound 2, cut 3 (1×1 m.)	10 m. diam	78	1,959	4,407	170.0
J-18 (1.5×1.5 m.)	25×6 m.	150	643	643	24.7

much larger than that from any of the other mounds at J–6 and cannot be considered as reflecting the original rate of sherd deposition.

A comparison of the estimated durations of J–4 and J–18 brings out another kind of discrepancy. In both of these sites the refuse deposit rests on an artificially constructed earth mound, in contrast to J–6, where the refuse extends to the original ground surface. The duration of 20.1 years for J–4 represents a concentration of sherds from the standard area of 1.5 by 1.5 m. but only 10 cm. in depth. The duration of 24.7 years for J–18 is derived from a refuse deposit of much less density, since only 120 more sherds were collected in a deposit of more than 60 cm. in depth. This situation permitted the excavation of J–18 in five levels and stretched out the period of time represented by this site on the seriation chart as compared to J–4 with only one level (fig. 85). In view of this lack of uniformity in the density of the sherd refuse in the Formiga Phase, it is safer to refrain from relying on the estimates of duration until more sites of this Phase have been examined and the variable features can be more adequately evaluated.

Two independent checks can be made on these estimates of village duration. Rouse (1952, pp. 564–565) has used rate of refuse accumulation to estimate the duration of the archeological periods on Puerto Rico. Using the depth of the deposits belonging to the historic period as a basis for calculation, he concluded that 40 years were required to accumulate 25 cm. of refuse, giving a rate of 1 cm. per 1.6 years. Rouse's figures utilize the actual depth of the deposit, rather than the density of sherds in the refuse that forms the basis of our calculations. A comparison of the results given by the two methods for sites of the Ananatuba and Mangueiras Phases (table I) shows interesting concordances as well as noteworthy discrepancies.

TABLE I.—*Differential results of two methods of calculating rate of village refuse accumulation*

Phase and sites	Our formula: 2,600 sherds per 1.5×1.5 meter cut equals 100 years	Rouse's formula: 1 cm. deposit equals 1.6 years
Ananatuba Phase:		
J–7, mound 1, cut 1	64.3	96.0
J–7, mound 2, cut 2	147.7	144.0
J–8	4.9	24.0
J–9	99.2	96.0
J–10	100.0	120.0
Mangueiras Phase:		
J–5	118.0	144.0
J–7, mound 1, cut 1	46.6	48.0
J–7, mound 2, cut 2	48.8	72.0
J–13	116.0	120.0
J–16	23.0	24.0
C–3, cut 1	84.0	64.0
C–3, cut 2	64.5	51.0

Of the 12 duration estimates for villages of the Ananatuba and Mangueiras Phases, Rouse's method of calculation gives larger figures than ours in 8 cases and smaller ones in 4. The differences amount to less than 5 years for J–9, J–13, J–16, the total duration of J–7, Mound 2 (cut 2), and the Mangueiras Phase occupation of J–7, Mound 1 (cut 1). Considering the completely independent derivation of the two methods of estimating duration, this is a remarkable correspondence. However, there are 4 cases in which the discrepancy between the two results is 20 to 31.7 years: J–5, J–10, the total duration of J–7, Mound 1 (cut 1), and the Mangueiras Phase occupation of J–7, Mound 2 (cut 2). In each of these, Rouse's method of determining duration gives the larger result. It seems possible that this is caused by the major consideration that prompted us to substitute sherd count for the more usual depth of refuse accumulation, namely, the accidental factors that may influence the amount of dirt mixed with the sherds under tropical forest conditions.

The second independent means of checking the reliability of our formula comes from ethnographic evidence. The writing of this report was interrupted by field work in British Guiana, during which we worked on the Upper Essequibo River among the Wai Wai Indians (Evans and Meggers, MS.). Since this group has not been disrupted by European contact and preserves its Tropical Forest Pattern of culture with a high degree of purity, we took advantage of the opportunity to test the rate of refuse deposition at two recently abandoned Wai Wai villages, where the actual period of habitation could be determined from informants. Since these Indians use a communal house, the rate of accumulation should be comparable to that in the Ananatuba, Mangueiras, and Aruã Phases. The only potential source of disagreement lies between the dirt floors of the Wai Wai and our interpretation that houses on piles may have been used by the archeological Phases.

There were two abandoned Wai Wai villages for which information on length of habitation was available. E–2 was said to have been occupied for about 6 years and E–11 for 3 to 4 years. From each of these sites a sherd collection was made from a measured area and the sample was counted. The result was then converted into the standard cut dimensions and the site duration computed according to the formula. Classification showed that the sherds from this part of E–11 belonged to an earlier (Taruma) occupation of the site, but the results at E–2 are almost identical to the duration given by the Wai Wai informant (table J).

In summarizing this effort to derive site duration from the density of the sherd refuse, it may be said that the method appears to have definite possibilities for application to Tropical Forest archeology.

TABLE J.—*Wai Wai village duration*

Site	Excavated area	Sherds recovered	Sherds per 1.5×1.5 m.	Duration estimated from sherd density	Actual duration
	Meters			*Years*	*Years*
E-2	2×2	317	177	6.82	6

Before it can be accepted without considerable qualification, however, more tests must be made in living or recently abandoned villages where the conclusions derived from sherd density can be checked against the actual period of habitation. With civilization rapidly encroaching on the remaining unacculturated tribes in the Amazon area, it is to be hoped that ethnologists will cooperate in securing the necessary information. On the archeologists' part, it would be advisable to base the duration estimate on an average density of sherds derived from several samples at a site rather than a single excavation as we have used in most cases here. This would minimize errors arising from the accidental selection of an unusually sparse or dense part of a site for excavation.

CHARACTERIZATION OF THE TROPICAL FOREST PHASES

Based on the archeological evidence, the four Tropical Forest Phases on Marajó can be characterized as follows:

Ananatuba Phase.—The people who left the remains identified ceramically as the Ananatuba Phase lived in isolated villages in an area whose known extent is from the north-central coast of Marajó inland toward the Rio Anajás. A single communal dwelling large enough to house between 100 and 150 individuals constituted the village, which was located in a patch of forest at the edge of the *campo*. Houses were probably raised on piles and may have had mud-plastered walls. Every bit of evidence, whether derived from village location, ceramic quality and stability, or village duration (estimated as typically 100 years), points to a quiet, peaceful existence, uninterrupted either by exhaustion of the food supply or by raids from belligerent neighboring tribes. This undisturbed type of life may be the reason that Ananatuba Phase ceramics are of such good quality and include the only well-developed decorated ware (Sipó Incised) present in the Tropical Forest archeological Phases. Two comments can be made in regard to burial practices, both negative ones: surface or mound urn burial was not the method of disposal of the dead, and abandonment of the house at the death of an occupant was not a custom of the culture.

Mangueiras Phase.—Sites of the Mangueiras Phase have been found on central and northern Marajó and on southern Caviana. A location was chosen in the forest accessible to a navigable stream. Villages appear to have been typically composed of several large communal houses, suggesting a village population in excess of that in any of the other Phases. Estimated duration of the villages varies from 10 to 118 years, and the number of simultaneously occupied sites for this Phase is indicative of a flourishing and expanding culture. This interpretation is further supported by the way the Mangueiras Phase people were able to dominate and assimilate the population of the Ananatuba Phase village of J–7, which they conquered. The promptness with which ceramic decoration of the Sipó Incised tradition was adopted illustrates the receptivity of the Mangueiras Phase to new ideas, and the rapid diffusion of Pseudo-Sipó Incised to distant villages indicates constant intercommunication. The pottery of this Phase is well made and durable, predominantly incompletely oxidized-fired in the early period and becoming completely oxidized in late times. This is the only Tropical Forest Phase making pipes, figurines, and labrets of pottery. There is no positive evidence for disposal of the dead, and the same negative considerations mentioned for the Ananatuba Phase apply here as well.

Formiga Phase.—This cultural complex is distinguished by a settlement pattern in which the village was situated in the *campo* and not readily accessible to navigable water (except J–18—Coroca). Two sites were identified near the north coast from the 1948–49 fieldwork and one more has since been found just southwest of Lago Ararí. A low, artificially constructed, earth mound underlies the refuse accumulation where the land is low, perhaps to raise the village area sufficiently to prevent its inundation during the rainy season. Formiga Phase ceramics are poor quality and unresistant to erosion. A clue to burial customs is presented by the discovery of a cremation intrusive into the refuse at J–6. Contemporary Formiga Phase settlements differ strikingly in vessel shape preference and decorative technique, indicating either a high degree of isolation or an unusual lack of interest in ceramic matters.

Aruã Phase.—The archeological evidence is supplemented with an occasional hint from historical (pp. 579 ff.) and ethnographical (p. 249) sources to produce a characterization of the Aruã. These people lived in very small communities, probably typically a single communal house sheltering half a dozen or less families, located on the shore of a navigable stream near the coast. This proximity to a ready route of travel and the extremely short duration (estimated 1 to 20 years) with which the majority of the sites were occupied give an impression of mobility to the Aruã culture that contrasts markedly with the sedentariness of the other Phases. There is a possibility that abandonment of the village was customary at the death of an occupant, a practice typical in the Guianas today (Gillin, 1948, p. 856). Aruã dead were buried in cemeteries, the bones placed in large jars that were set on the surface of the ground in a forested spot. Practically the only ceramic decoration used by these people was applied to the burial urns. An occasional burial offering consisted of a small, crude pottery bowl, a polished stone ax or, after European contact, glass beads and other trade objects.

THE MARAJOARA PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

The existence of the Marajoara Phase has long been known, and prior to the 1948–49 expedition it was thought to be the only one occupying Marajó. It is distributed on the eastern half of the island, within a circle roughly 100 km. in diameter, with its center at Lago Ararí (fig. 145). The sites composing J–14 and J–15 are near the southwestern limit of this area, at the headwaters of the Rio Anajás.

SITE J–14—MONTE CARMELO

The Monte Carmelo group consists of three mounds situated on the main course of the upper Rio Anajás (fig. 47). Although the site was visited by Steere (1927) in 1879 and Holdridge (1939) in 1931, neither recorded an accurate description (see pp. 308-309).

Before beginning excavation, a reconnaissance was made to determine the nature and extent of the sites. The two largest mounds are along the south bank of the river, separated by 100 meters of low land, which is flooded during the rainy season. Both are cemeteries. The third is about 150 meters north of Mound 1, on the opposite side of the river. It is considerably lower in elevation and was identified as a habitation site. Of the three, Mound 1 appeared to be the least disturbed by erosion and cultivation, and it was selected for more intensive examination.

Mound 1, Guajará.—This mound measured 121 meters long by 56 meters wide at the end of the 1949 rainy season, when the water was at its highest level (fig. 88). Land was inundated on all sides, making approach possible only by boat. The present contours suggest that it was constructed in two parts, leaving a "waist" a little west of the center produced by a depression on the top and indentations on the north and south sides. The east end is higher than the west, the former rising 6.50 meters above the water, the latter 4.75 meters. The sides slope upward at approximately a 30-degree angle to a flattened platform 20 by 70 meters. The north side has suffered most from erosion and surface sherds are particularly abundant there. Near the east end, where the slope had been cleared for a modern

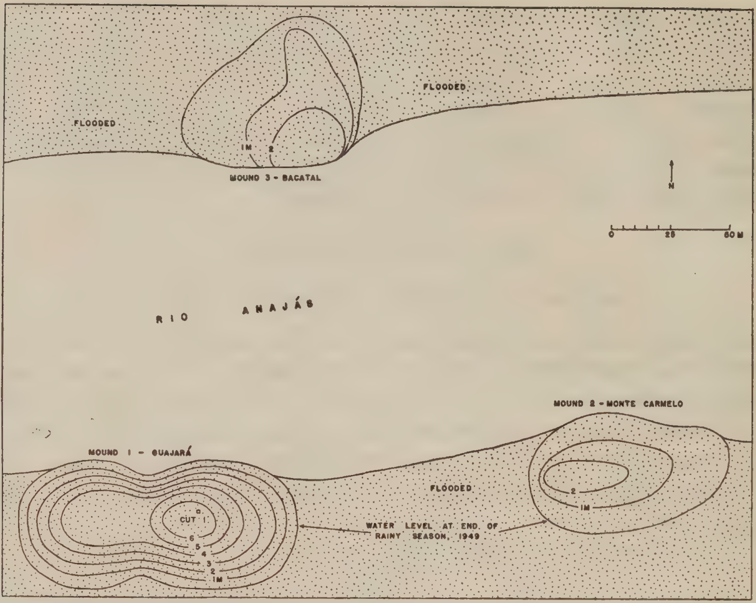

Figure 88.—Plan of J–14, Mounds 1, 2, and 3, a mound group of the Marajoara Phase.

house, the circular mouths of large jars were outlined on the surface. The entire site is overgrown with large trees, among them cacao, which the present inhabitants believe to be of Indian origin (pl. 34, *a*). The surface collection was selected in a manner similar to that from J–15, Mound 1 (see p. 286), and produced a variety of decorated sherds, a miniature stone ax (fig. 132, *b*), and a pottery spindle whorl (fig. 136, *b*) (see pp. 372 and 380 for descriptions).

Cut 1, 1.5 meters square and excavated by 15-cm. levels, was begun in the area of highest elevation, 50 meters from the east end of the mound. The soil for the first 20 cm. was dark gray-brown loam containing many sherds and roots. The broken edges of a nest of four vessels were encountered in the second level on the northwest side, with the base of the largest resting at 55 cm. (fig. 89). The body of this jar (A), measuring 70 cm. in maximum diameter, was intact below the shoulder. Large sherds from the rim were broken off and inverted around the neck of the second jar, which had been placed inside.

Jar A, Joanes Painted (fig. 90): The exterior is covered with a paper-thin, white slip, with lumps and irregularities where applied unevenly or dried before well-smoothed. Slip continues over to the interior of neck. Remnants of polychrome painted design, composed of wide (1.1–2.2 cm.) and narrow (pairs or threes, 1.5 mm. wide), red and black lines, covering neck and body. Two sherds

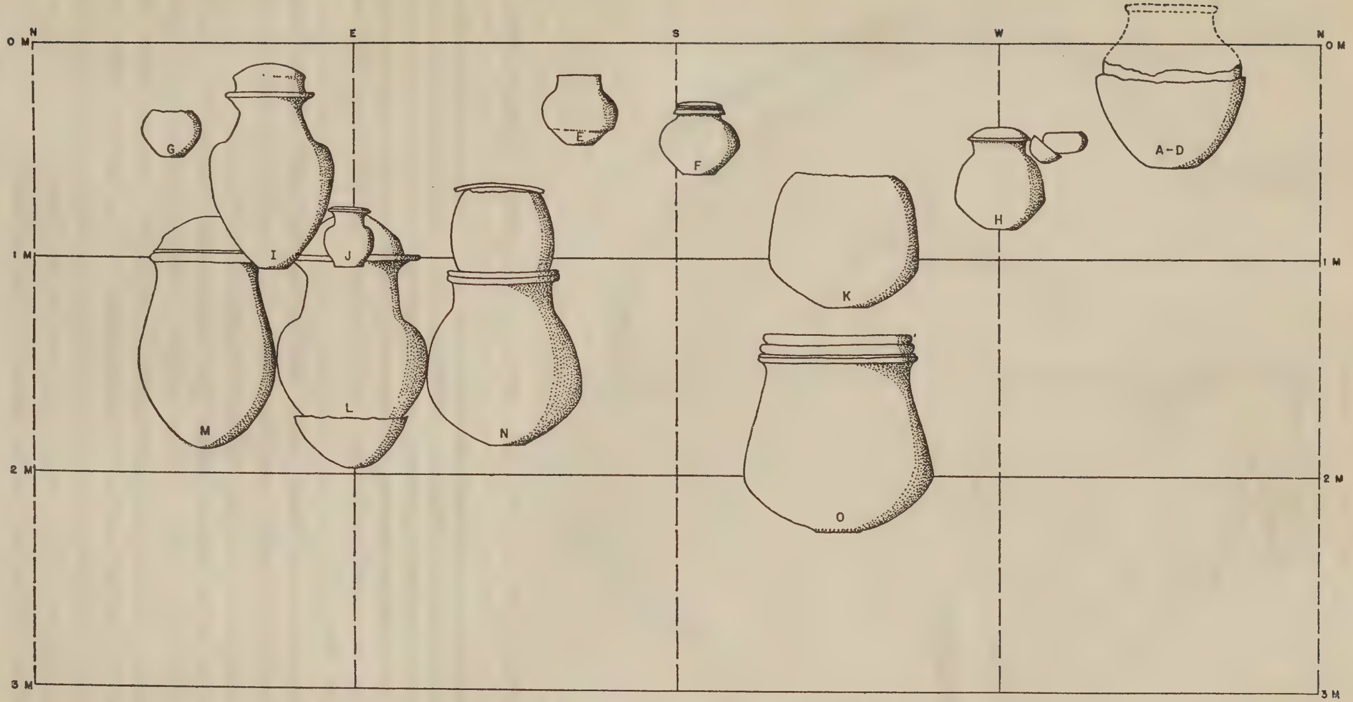
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FIGURE 89.—Burial stratigraphy of J–14, Mound 1, cut 1, Marajoara Phase.

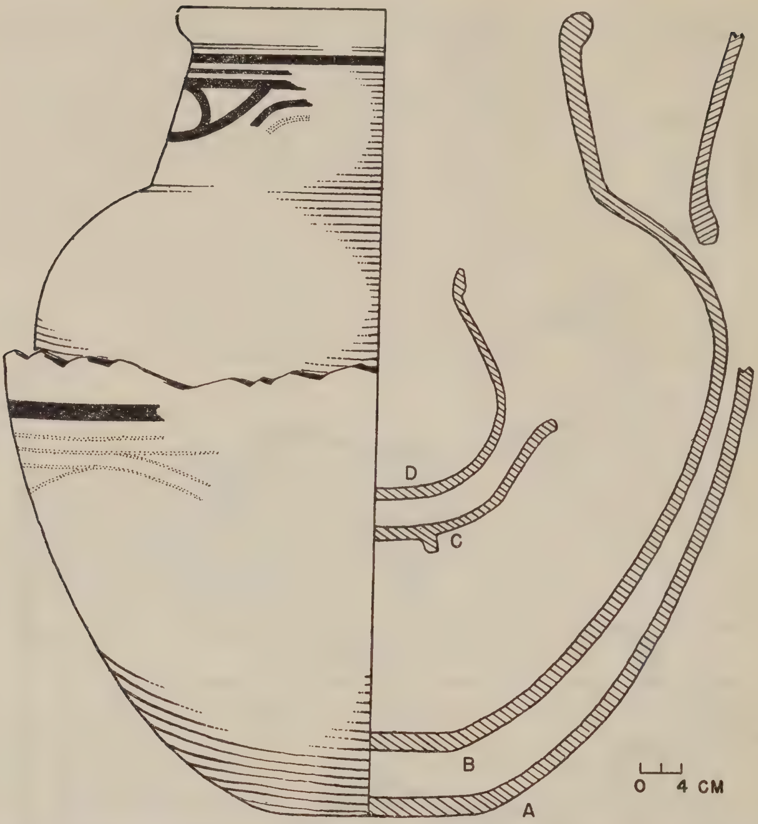

FIGURE 90.—J–14, Mound 1, cut 1, vessels A, B, C, and D, Marajoara Phase.

with convex bosses averaging 8 cm. in diameter, one with heart-shaped applique, belonged on the neck (cf. Palmatary, 1950, pl. 90, a). The thickened rim exterior was painted with a wide red band. As reconstructed, the jar had a globular body 70 cm. in maximum diameter, an insloping neck and rim diameter of 50 cm. Wall thickness at neck and shoulder varied between 1.0 and 1.5 cm. The paste had a gray core.

Four centimeters of black, ashy dirt containing fragments of burnt bone and tiny sherds remained inside the bottom of this jar. A small, blunt stone ax (fig. 133) lay outside near the base.

The rim of the second vessel (jar B) was also broken off and scattered around the edge. It was similar in shape but slightly smaller than jar A. Inside were a small jar (D) resting on a small open bowl (C), and the remains of a cremation burial. The fact that these two jars, when intact, would project above the surface at its present level is an indication of the minimum amount of diminution the mound must have suffered by erosion since Marajoara times.

Jar B, Joanes Painted (fig. 90): White slip on exterior, smooth and slightly undulating to the touch, occasional small lumps and scattered crackle. Slip carried over rim top. Interior rough because of protruding temper grains and insufficient smoothing. Traces of paint on neck and body indicate the design to have been polychrome, black predominating on the neck, with red used for accent, and equal or greater use of red with black on the body. Lines appear to have been wide (7–12 mm.). No sherds were found with relief or applique. Thickness of wall at neck and shoulder varied from 1.1 to 1.7 cm. Reconstructed height was 70 cm., maximum body diameter 65 cm., and rim diameter 39 cm. The paste had a gray core.

Jar C, white slipped (fig. 90): White slip covering interior, paper-thin, evenly applied, with prominent coarse crackle, and showing no traces of paint. Exterior somewhat irregular, with finger-print smoothing marks running parallel to the rim, pocks and slight lumps. The profile is asymmetrical, with the side walls varying from curved to angular. An oval pedestal base 12.5 by 15.5 cm. in diameter is formed by a coil 1 cm. wide and 2 cm. high. Rim diameter, 34 cm.

Jar D, Inajá Plain (fig. 90): Exterior and interior well smoothed. Flattened bottom, 7 cm. in diameter; globular body, 24 cm. diameter; rim diameter, 16 cm.; height, 21 cm. Rim ornamented with applique nubbins 1.7–2.2 cm. long and 1.2 cm. wide, with two vertical notches on each.

These small vessels rested at a depth of 30 cm. below the surface. At this level, pockets of orange-brown clay began to appear. The base of jar E rested at 45 cm. and although badly shattered, it sheltered black, ashy soil with flecks of bone and lumps of taffylike clay flecked with red, yellow, and black, indicating a cremation. No teeth were found.

Jar E, Joanes Painted (fig. 91): A paper-thin, white, smooth and even slip covers the exterior from the rim to a ridge 6.5 cm. above the base. Base of exterior and entire interior fired an even shade of orange; surface regular but not smoothed sufficiently to obliterate slight pits. On opposite sides of the body in the area of maximum diameter are two anthropomorphic faces formed by applique strips. The eyebrows are 2 mm. high while the nose is 7 mm. high. The arched eyebrows continue halfway around the side, meeting a painted red line that borders the chin. The remainder of the slipped surface bears traces of a geometric design in paired red lines 2–3 mm. wide. The jar has a flat bottom 12 cm. in diameter, a depressed-globular body 37 cm. in maximum diameter, a short vertical neck 9 cm. high and 20 cm. in diameter, terminating in a direct rim. Total height is 31 cm.

As the 4th level was begun, it became apparent that continuing the excavation in 15-cm. levels would not be practical. Sherds in the fill were rare except as parts of burial jars, and the position of the jars bore no relation to the arbitrarily divided levels. Records were instead kept of the position and condition of each jar as it was encountered in the excavation.

The base of jar F rested at a depth of 60 cm. in the center of the cut. The lid was broken but in place covering the mouth. Black ash inside indicated that the jar had contained a cremation.

Jar F, Inajá Plain (fig. 92): Both exterior and interior are slipped with a layer of the same clay as the paste, averaging 0.75 mm. thick. This slip is fired

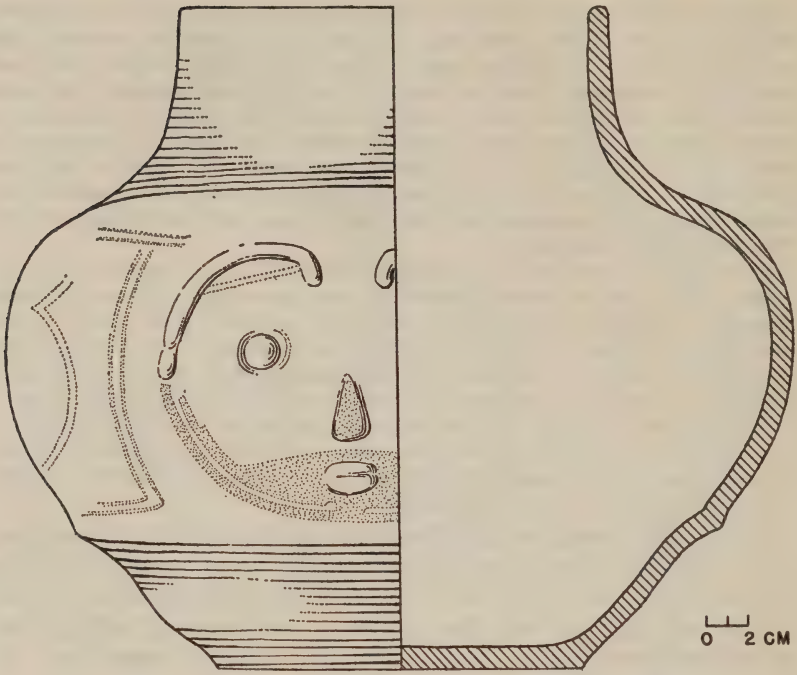

FIGURE 91.—J–14, Mound 1, cut 1, jar E, Marajoara Phase.

orange on the exterior and steel gray on the interior, forming a distinct compact layer easily seen on the cross section. Brush marks cover both surfaces, making them uneven, and on the neck exterior the slip has been wiped in such a way as to produce two ridges giving somewhat the effect of unsmoothed, overlapping coils. The jar is 30.5 cm. tall, with a short, slightly insloping neck 5.5 cm. high, a globular body 38 cm. in diameter, and a short, pedestal-like base 1 cm. high and 16 cm. in diameter. The direct rim is 18 cm. in diameter. The lid, Anajás Plain Incised, is likewise covered with a thin slip of the same clay as the paste, and bears the marks of a broad smoothing tool. It is a bowl with a rounded bottom and short, slightly outsloping sides. Rim diameter is 24 cm.; height of the wall 3.4 cm; total height, 6 cm. Decoration consists of 3 parallel, incised lines 1–2 mm. wide running horizontally in the area between the angular junction with the base and the rim thickening. The core is completely oxidized.

Toward the northeast side of the cut, with its base at a depth of 55 cm., was the globular bottom of a small, broken, plain jar (jar G). The neck was missing and the body was filled with orange clay. The existing fragment was 21 cm. high, 27 cm. in maximum diameter, with a rounded bottom 8 cm. in diameter. The soil in the entire north half of the cut at this depth was bright orange, becoming browner toward the south, and contained many hard, fire-burnt lumps of clay.

Jar H was encountered in the west corner with its base at a depth

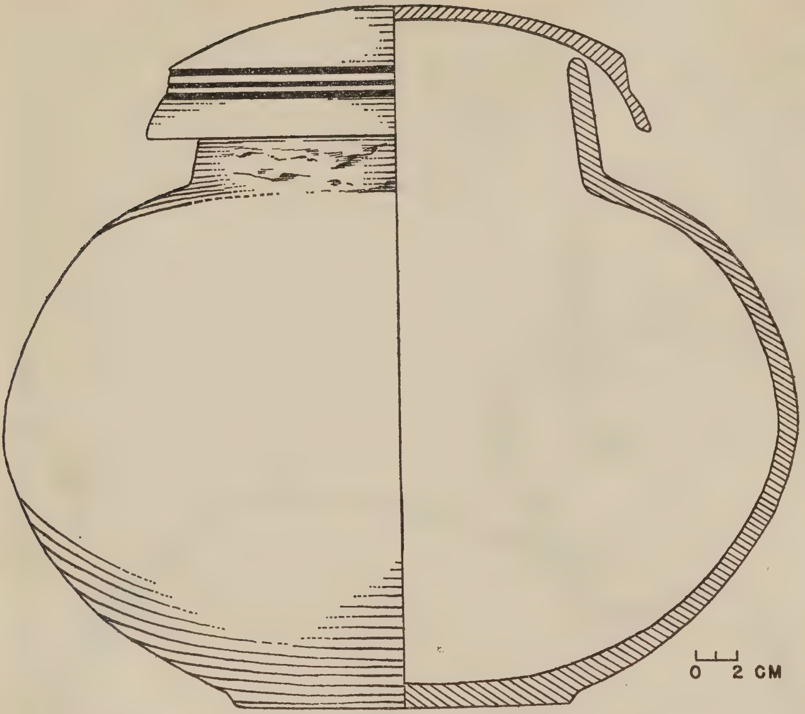

FIGURE 92.—J-14, Mound 1, cut 1, jar F, Marajoara Phase.

of 85 cm. Except for a broken rim edge, it was intact. A bowl-like lid was inverted over the mouth and extended slightly beyond it. Inside the jar were bone ash and sherds that appeared to be fragments of a platterlike bowl. Two small bowls, superimposed, rested on the shoulder. The upper one, slightly the larger, contained black dirt and a couple of tiny sherds. At a depth of 75 cm., fragments of a human skeleton were found adjacent to the jar, on the outside.

Jar H, Joanes Painted (fig. 93): White slipped on neck interior and extending over exterior to just below the maximum diameter, smooth and even except toward the lower limit. The remainder of the surface, both interior and exterior, is also well smoothed. Dark-gray fire clouds are scattered on the exterior. The paste has a gray core. The neck is embellished with low relief bands, the intervening areas painted geometrically with red lines 2 mm. wide. Traces of paint on the body reveal a polychrome pattern, with narrow, paired, red lines separating bands of interlocking spirals and steps done in black. The jar has a slightly outsloping neck, 7 cm. high; a depressed-globular body, 40 cm. maximum diameter, and a flattened bottom, 12 cm. diameter. Total height is 42 cm. The lid is an Anajás Plain Incised bowl, 28 cm. in exterior rim diameter and 6 cm. deep. The interior is smooth, either well-floated or slipped with the same clay as the paste, which has an orange core. The exterior is much rougher, with prominent smoothing marks, pocks, and some crackle. Decoration is limited to two parallel, in-

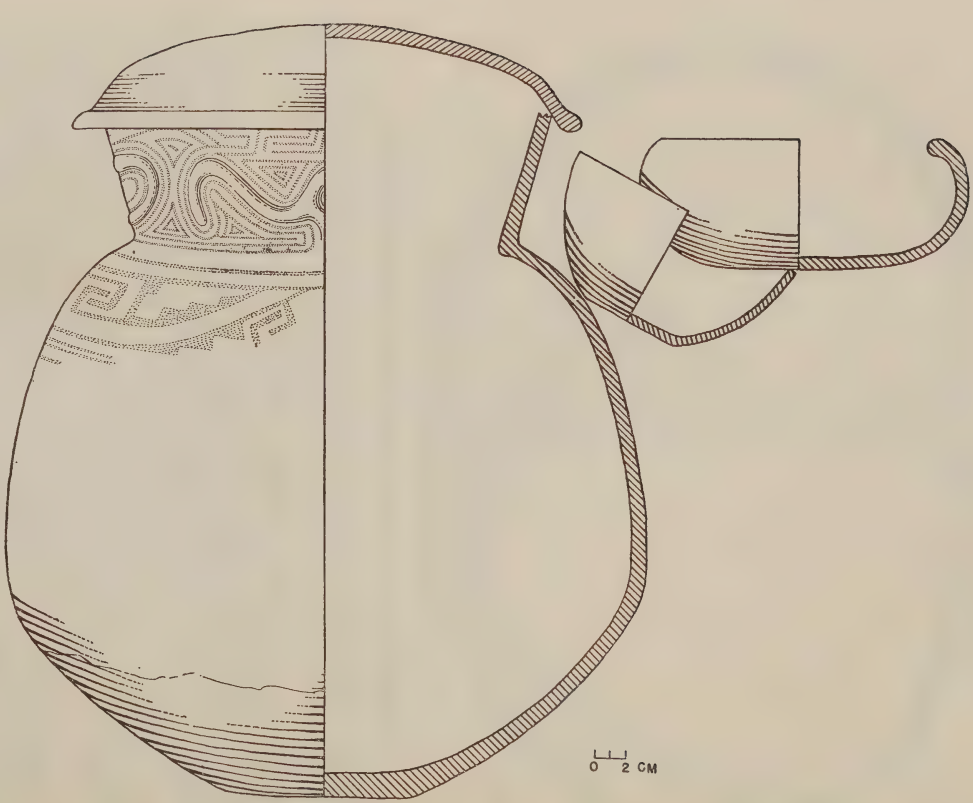

FIGURE 93.—J–14, Mound 1, cut 1, jar H, Marajoara Phase.

cised lines around the flat upper edge of the exteriorly thickened rim. Many black and gray fire clouds are present on the exterior.

Both of the small associated bowls are Inajá Plain. The lower and smaller one (pl. 66, *b*) is 8 cm. deep, 16 cm. in diameter at the direct rim, and 7 cm. in diameter at the slightly rounded base. The walls are 5 mm. thick. It is regular and symmetrical, with the surfaces well-polished. The upper bowl (pl. 66, *a*) is 8.5 cm. deep, with a flattened bottom and convex sides curving outward to a maximum diameter of 21 cm. and then inward to the constructed mouth with a diameter of 17 cm. Both surfaces are well-smoothed, with a few fire clouds on the exterior.

The upper edge of jar I appeared in the 4th level, with a carinated bowl resting inverted inside its flaring rim as a lid. The neck and rim had been broken off by earth pressure and pushed down inside the body, which was leaning slightly to the east. The jar was filled with very wet earth, which had reduced the bones of a secondary burial to a puttylike consistency. The long bones had been laid in a pile along the east side. Associated was a complete red-slipped tanga.

Jar I, Joanes Painted (fig. 94): The entire exterior of the vessel and the flaring rim are covered with thin, white slip, eroded off in spots and revealing a light-orange undersurface. Both surface and slip are smooth. The paste has a gray core. The jar is 82 cm. in total height, and 22 cm. tall from the base of the neck to the upper rim edge. Rim diameter is 42 cm.; maximum body diameter, 58 cm.; and the diameter of the flat base, 13 cm. Wall thickness is 1.6 cm. at the everted rim and 1.1–1.2 cm. on neck and body. The neck bears two anthropomorphic faces on opposite sides, with the features indicated by low relief: heavy-lidded eyes, U-shaped nose with prominent tip, 8-shaped ears, and protruding mouth. Two appliques 7.6 cm. long, 3 cm. wide and triangular in profile were apparently attached to the shoulder and may have been lugs. The entire exterior was painted in black and red in a geometric pattern of wide and narrow lines similar to that on Jar L. The lid is Ararí Plain Excised (pl. 58, *i*). Both surfaces were covered with a slip of the same clay as the paste (which had a gray core) and well-polished so as to produce a slick finish and a slight luster. The exterior is ornamented with three bands of excision, one on the thickened rim exterior, one on the concave side and one around the edge of the curved bottom. The excisions are deep and the design regularly executed. The bowl is 34 cm. in maximum diameter and 15.5 cm. deep.

Resting at the same level as jar I and with a section of the rim broken out where it leaned against the side of the latter, was jar J. Although it is considerably smaller than is typical for vessels with secondary burials, it conforms to this earlier pattern in having the lid resting inside the neck. Inside were fragments of unburned bones, sherds from the broken lid and a sherd from the rim of a large Inajá Plain jar, which had an original diameter of 54 cm. (no other sherds belonging to this jar were encountered).

Jar J, Joanes Painted (fig. 95; pl. 75, a): The paste has an orange core. Both surfaces are covered with a white slip, with a few fire clouds on the inner mouth. The exterior rim edge and the pedestal base are painted red, and the remainder of the exterior is covered with concentric circles and spirals in black, with the inter-

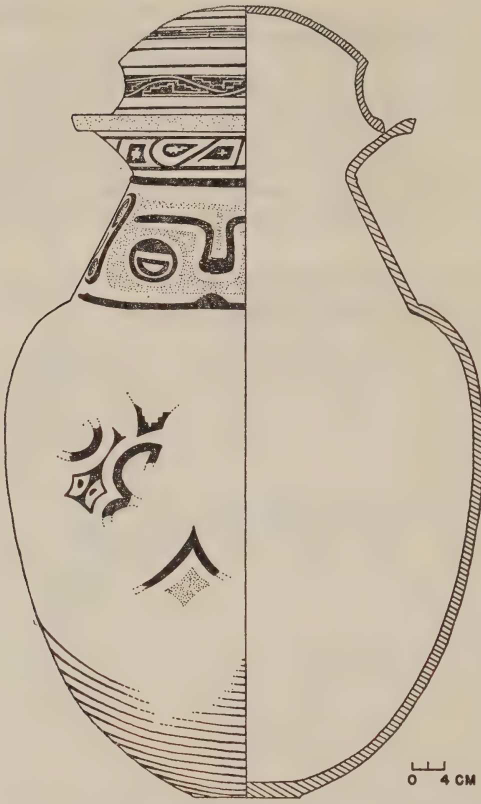

FIGURE 94.—J–14, Mound 1, cut 1, jar I, Marajoara Phase.

vening areas painted solid, giving a negative effect. The painted lines are crooked, wavering, and unequally spaced (cf. Palmatary, 1950, pl. 85, a). The vessel is 26 cm. in height, 21 cm. in rim diameter, 23 cm. in maximum body diameter and 14 cm. in base diameter. It has a slightly outflaring neck 7.5 cm. tall, a globular body and a flat, pedestallike base. The lid was a small, carinated bowl with Ararí Plain Excised decoration (pl. 57, *a*), 15 cm. in diameter and 4 cm. in depth. Both surfaces are well-smoothed and the paste has an orange core. The entire exterior is covered with the excised design, and the excisions were filled with white.

In the west corner, at a depth of 1.20 meters, was a fragment of the upper part of a small and unusually shaped Inajá Plain vessel with applique decoration.

Inajá Plain vessel fragment: The fragment has a tall conoidal base, sloping inward toward the upper part, which is an expanded, cuplike neck terminating in an everted rim and flattened lip. Mouth diameter is 12.5 cm., neck height 5 cm., diameter at junction with base 6 cm., existing height 10 cm. Crude anthropomorphic faces ornament opposite sides of the neck. They are composed of oval, coffee-bean eyes, a larger similar applique for the nose-mouth, and fillets curving upward from the center above and around the eyes. The same ears function for both faces and are high relief, with an indentation just above the middle, producing an upper and a lower lobe. Although the top is more elaborate, the general shape of the base suggests that this is a variation of the tall, semicylindrical potstands found with relative frequency in many Marajoara Phase cemeteries.

At the southwest side of the cut, with its base at a depth of 1.20 meters, was jar K. The neck and rim were missing and the sherds were not encountered in the fill. Inside the jar, with its upper edge 28 cm. below the broken top of jar K was a large, complete Camutins Plain basin, almost level and upright, and containing reddish clay. Directly beneath the basin were the remains of a skeleton, in relatively good condition as a result of the protection afforded by the basin. The skull had been placed at the northwest edge, 45 cm. below the existing top of the jar; the ribs were adjacent to the north, the pelvis was to the southeast, and the long bones were in the southwest half, 50 cm. below the existing top of the jar. Traces of red paint were visible on the femur. As many fragments as could be salvaged were preserved

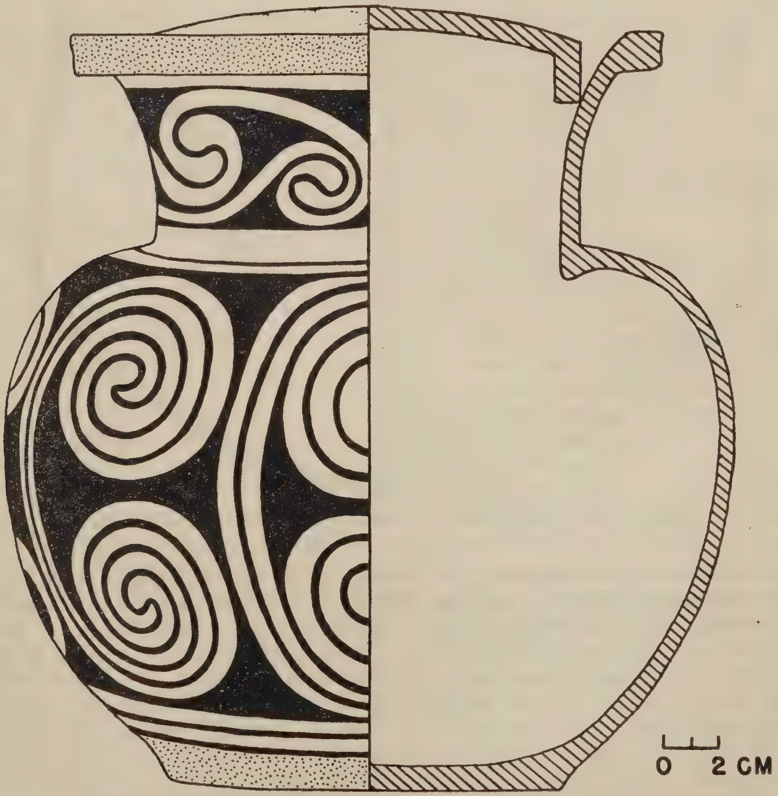

FIGURE 95.—J-14, Mound 1, cut 1, jar J, Marajoara Phase.

and submitted to Marshall T. Newman, United States National Museum, for examination. He reported (pers. commun.), "fragmentary remains of apparently one individual . . .: there is no duplication of parts, and all remains are consistent with the picture of an adult male. Age cannot be determined, although the teeth show wear approaching 4th degree (pulp cavities exposed). There are signs of several apical abscesses on the maxilla."

Jar K, Inajá Plain (fig. 96): The exterior is bright orange, the interior light gray, both surfaces undulating and not sufficiently smoothed to remove pits and irregularities. The slightly concave base is 18 cm. in diameter. The walls slope outward to the maximum body diameter of 70 cm. (at a height of 20 cm.) and then continue upward, curving slightly inward until the shoulder, where the curve becomes more pronounced. Existing height (approximately to the lower edge of the neck) is 62 cm. The basin found inside is Camutins Plain (pl. 67, *c*), with both surfaces smoothed, leaving the striations of the smoothing tool clearly visible. Several dark-gray fire clouds mar the otherwise bright, tile-orange surfaces. The thick, everted rim is irregular, with a diameter of 45–46 cm. Four slight protuberances are distributed along the outer edge. The flattened bottom has a diameter of 14 cm. from which the walls curve out to the maximum diameter at a height of 7 cm., and then rise vertically to the everted rim. Total height is 20 cm.

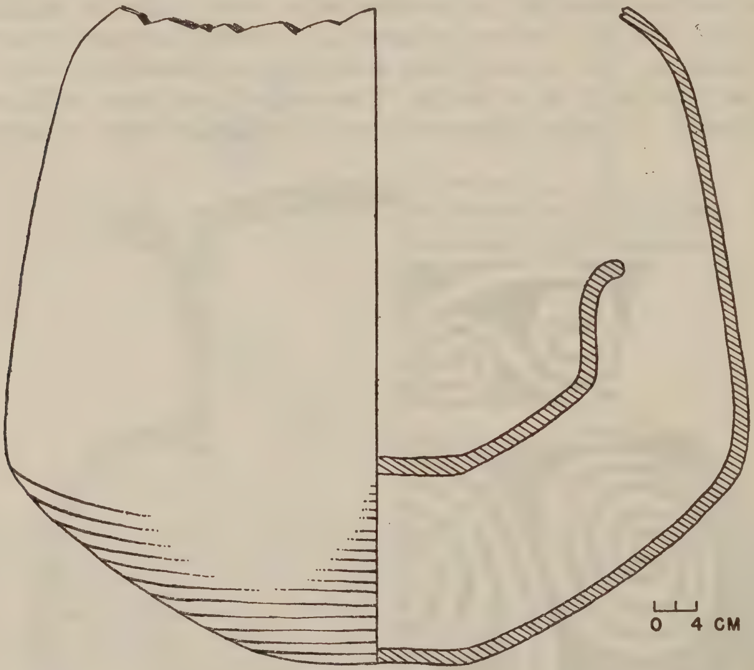

FIGURE 96.—J–14, Mound 1, cut 1, jar K, Marajoara Phase.

In the east corner of the cut, behind and partly beneath jar I, was the upper edge of jar L with its base at a depth of 1.80 meters. The large basin that had been inverted and placed over the mouth was badly broken (Meggers and Evans, 1954, pl. 7), possibly during excavation for the burial of jar I. The jar itself was intact except that the widely flaring rim had been broken off, but all the fragments were lying around the neck. The interior was filled with dirt containing fire-burnt lumps, small sherds, wood ash, and yellow sand, apparently taken from the fill and put inside at the time of burial. The remnants of a human skeleton were arranged in the bottom (depth, 65 cm. below the top of the neck), with the long bones at the north side running east-west. The femurs showed traces of red paint. M. T. Newman, United States National Museum reports "no evidence of more than one individual represented. This individual has light gracile bones, and may represent a sub-adult or adult individual" (pers. commun.). A highly polished, orange tanga (pl. 82, *c*) lay at the southeast side. This was the only tanga found that was slipped with the same clay as the paste instead of with red, but it exceeded all others in perfection of smoothing and completeness of polishing.

Jar L was resting in the broken bottom of an Inajá Plain jar, the existing fragment of which was 22 cm. in height. No further parts of this jar were found. It contained dirt, human bone fragments, and a broken red tanga. On the south side of jar L, at the base of the neck, were found additional human bone fragments and a broken red tanga (pl. 82, *e*), representing a third burial.

Jar L, Joanes Painted (*fig. 97*; *pl. 76*): The entire vessel, with the exception of the exterior of the flat bottom and the interior below the neck, is covered with a white slip, 0.5 mm. thick, well-smoothed, and even. There is one small (15 cm. dia.) fire cloud on the body, otherwise the white slip was not discolored. The paste has a gray core. Two anthropomorphic faces adorn opposite sides of the neck. The features are similar in execution to those on jar I, which stood above this one: bulbous, half-shut eyes, prominent bifurcated nose, protruding mouth, and hour-glass-shaped ears. The ears on this vessel appear to have an ornamental spool inserted in the lobe, with a pendant tassel shown in low relief (fig. 147, *a*). The area around the eyes and mouth is painted solid red, which continues below the mouth to a cylindrical, horizontally pierced lug. Between the ears of the two faces is a small anthropomorphic figure with a highly stylized face, the left arm extending upward and the right one bent downward, and the legs slightly buckled. The curvilinear motifs filling the background are in red. On the body, the design is principally in black, with red used sparingly for accent. The design partly carries further the anthropomorphic theme by showing stylized arms and hands with four fingers. Below the small figures on the neck are stylized faces with double, curled topknots and pronged ears. All the remaining surface is divided into small, irregular spaces filled with short lines and so expertly balanced as to give the impression of symmetry, although close examination shows the treatment of each area to be slightly different. Occasional small drops of red paint occur on the body, where they splashed during the painting of the neck, indicating that the body was done first. The jar has a

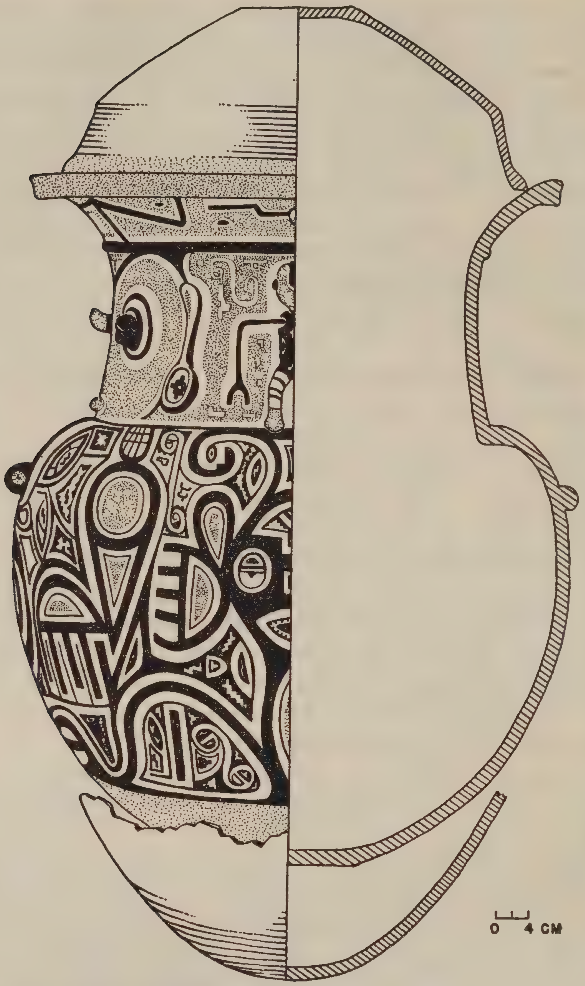

FIGURE 97.—J-14, Mound 1, cut 1, jar L, Marajoara Phase.

widely flaring rim, 65 cm. in diameter, a sloping neck 22 cm. tall, prominent shoulders, a rounded body and a flat, slight pedestal base 16 cm. in diameter. Maximum body diameter is 70 cm.; total height, 84 cm.

Lid, Joanes Painted (*fig. 97*): Interior and vertical sides of exterior white slipped, well smoothed, with slight crackle on exterior. The paste has a gray core and the unslipped surfaces are tan to bright orange and smoothed with polishing tracks visible. About one-third of the surface is fire clouded. No painting is visible except on the exterior edge of the rim, which is red. The shape is that of a deep, small-bottom bowl with slightly carinated sides and the maximum diameter at the rim. Dimensions are: rim diameter, 48–51 cm.; body diameter at carination, 42–45 cm.; base diameter, 15 cm.; total height, 20 cm.; height above carination, 9 cm. The exterior of the base is slightly concave.

Jar L was flanked by two Inajá Plain jars, placed at the same depth and with their body walls touching those of jar L, so that it is evident that all three jars were interred as a unit. The elaborateness of the central jar makes it probable that it contained an important personage whose comfort in the next world needed to be assured. Jar M, on the north side of jar L, was covered with an inverted bowl 2 cm. smaller in rim diameter than the jar. The interior was filled with whitish sand in which were embedded two bowls and the bones of two individuals. When found, the bowls were resting at an angle with their mouths on the same slope, the smaller one to the north and 46 cm. deep, the larger to the south and 48 cm. deep (fig. 98). Both were filled with dirt, that from the larger containing fragments of charcoal. Beneath the bowls were the disarticulated bones of one individual, miscellaneous sherds, and, in the center of the jar, a complete red-slipped tanga. About 15 cm. below this first set of bones was part of a second skeleton. The jar also contained a number of miscellaneous nonhuman bones. Field identification gave an inventory of 3 skull fragments from small rodents, 4 parts of bird skulls including one from a large species like the *tuyuyú*, and numerous postcranial fragments. Both human and animal bones had been painted red, traces of the pigment being discernible even on the smallest scraps.

The human bones were submitted to Marshall T. Newman, U. S. National Museum, for examination and he was able to identify both age and sex: "These bones represent the very fragmentary remains of a rather rugged male over 26 years of age, and a gracile female between about 18 and 25 years (distal end of clavicle unfused)." The male, which was the upper burial, shows one outstanding feature: "The glabellar fragment is particularly interesting since it shows almost positive frontal deformation of the sort that levels out the brow ridges and glabella, reduces the nasion depression to almost no depression at all, and makes for an almost straight profile from hair line to nasal bones" (pers. commun.). The female showed third-degree wear on all teeth in spite of her apparent youth, suggesting extremely gritty food. It is of interest to note that the tanga appears to have been associated with the male rather than with the female.

Jar M, *Inajá Plain* (*fig. 98*): The surfaces are dull tan to light brown, with patches of orange and red-orange and small, light-gray fire clouds. Temper is coarse (one grain was 1.1 cm. in diameter) but evenly distributed. A thin slip of the same clay as the paste was applied on the exterior, filling some of the scars and pits that remain on the interior but showing scattered crackle. Slight horizontal grooves on the exterior reveal where one coil had been joined to the next. These coils are 3 cm. wide. The jar is 89 cm. tall, with an exteriorly thickened, everted rim 54 cm. in diameter, sides sloping out to a maximum body diameter of 65 cm. and then curving inward to a subconical base. The maximum

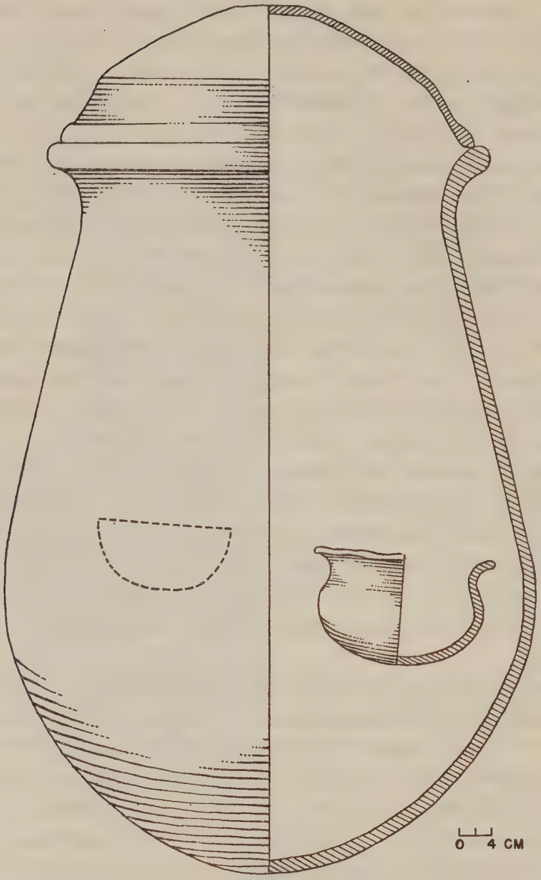

FIGURE 98.—J-14, Mound 1, cut 1, jar M, Marajoara Phase.

body diameter is attained 35 cm. above the base. Body wall thickness varies between 1.4 and 1.7 cm., rim thickness is 3.3 cm.

The lid is Camutins Plain, with an orange-tan surface and some fire clouding. The interior is smooth and even, while the exterior is marred by smoothing marks and other irregularities. The short, outslanting sides join the curving bottom at an angle of 25 degrees. The base is flattened. Exterior diameter of the thickened rim is 52 cm., total depth is 18 cm., and wall thickness, 7 mm.

The smaller of the two offertory bowls (pl. 66, *c*) was a variety of Camutins Plain, with a dark-tan to orange-tan, slightly fire-clouded surface and a reddish-brown paste. Smoothing and polishing striations are visible on all surfaces except the exterior of the rounded base, which remains rough and uneven. The bowl is 6.5 cm. deep, with a direct rim, slightly insloping sides and a rounded bottom. It is asymmetrical, whether seen from above or in profile, the rim diameter varying from 15.5 to 16.0 cm. Wall thickness is 9 mm.

The larger bowl (pl. 66, *d*) is Inajá Plain, with a bright, reddish-orange surface except for a dark-gray fire cloud on the exterior. The body of the vessel was smoothed, leaving polishing marks and a surface that remains uneven and irregular, apparently because the smoothing was done after the clay was too dry. The underside of the rim and the exterior of the neck were roughened so that temper particles protrude in the deep scratches. Rim diameter is 22–23 cm., flaring out from a short neck 4 cm. high, joined to the shoulder of the rounded body. Total depth is 13.5 cm., body wall thickness 1 cm. As was true of the smaller bowl, this one is asymmetrical. At four equidistant places along the exterior edge, the rim is expanded slightly to produce a bifurcated ornamental lip.

Flanking jar L on the opposite side was jar N, also a plain ware vessel. It contained light-gray dirt, ash and scattered sherds; hunks of yellowish clay appeared at the area of maximum diameter, and white, sandy clay filled the bottom. Beneath a layer of miscellaneous large sherds were bone fragments too badly disintegrated for preservation (jars L through O all had a concentration of sherds as large as 15–20 cm. just above the bones). No tanga was associated. Instead of the usual type of lid, jar N was covered with the body of another jar, the base of which extended halfway into the neck of jar N. This second jar contained very wet dirt, sherds with ornamented rim, and skeletal fragments. The neck and rim were broken off and missing, and a large sherd had been laid over this broken top to protect the contents.

Jar N, Inajá Plain (*fig. 99*)*:* Surfaces light to medium orange, with a light-gray to black fire cloud extending over half of the neck and the shoulder. Both surfaces are slipped with a thin layer of the same clay as the paste. The interior is smoother than the exterior, but both have smoothing lines, grooves and crackle. Undulations on the exterior reveal coils 5 cm. wide, more easily felt than seen. The jar has a vertical neck 15 cm. tall, ending in an exteriorly thickened, everted rim with a deep groove along the exterior edge. Rim diameter is 54 cm. The neck joins a rounded shoulder, from which the body wall slopes outward to a maximum diameter of 70 cm. (21 cm. above the base) and then inward to the flattened bottom. Wall thickness varies from 1.8 to 2.1 cm. on the body and 2.4 to 3.0 cm. on the neck. Total height of the jar is 79 cm.

The jar fragment comprising the lid has rounded sides and bottom. Maximum body diameter is 48 cm., and the height of the existing fragment is also 48 cm. Wall thickness is 1.5 cm.

On the southeast side of the cut, almost directly beneath jar K, was jar O, the base of which rested at a depth of 2.23 meters (Meggers, 1951, fig. 7, left). Two basins, similar in shape but larger than the lid of jar L were superimposed right side up inside the neck. The dimensions and contours of the upper basin were such that it fit inside the lower one closely and there was little dirt between them. The bottom and part of one side of the upper basin were missing. Although the second basin was also broken when discovered, sherds from the bottom were found inside the main jar, indicating that it was complete when set in place. The exterior wall was flush with the interior of the outflaring rim of the jar. Inside the upper bowl lid, 14 cm. below the rim and upside down against the southeast side,

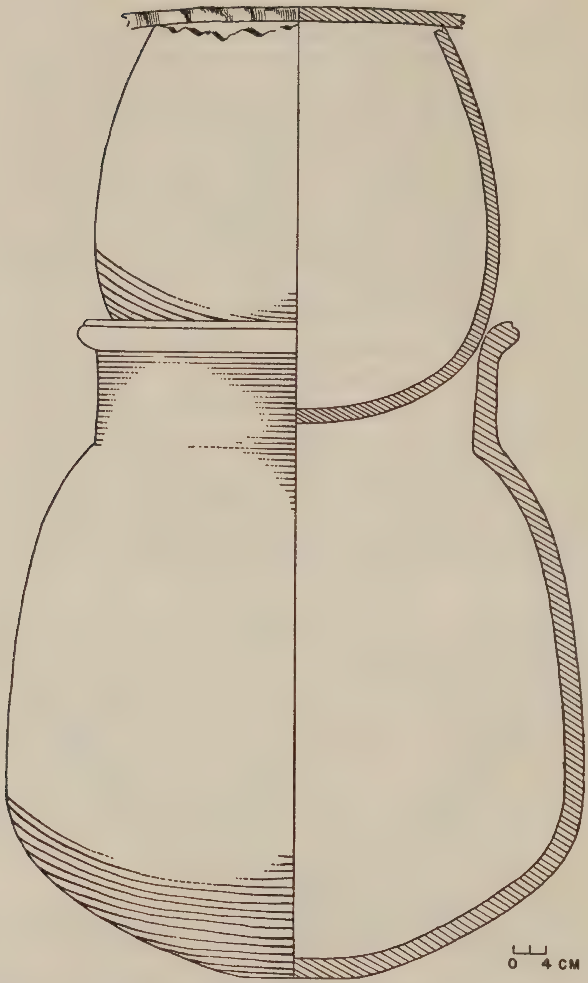

Figure 99.—J–14, Mound 1, cut 1, jar N, Marajoara Phase.

was the bottom part of a small, crudely excised jar. Inside jar O were sherds from the broken basin lids, at least three broken bowls of different sizes, a red-slipped tanga and, at a depth of 68 cm. below the rim, the bones of a disarticulated skeleton, with the long bones arranged along the north-south axis. A layer of relatively large sherds was spread immediately above the bones. Outside the jar, at a depth of 1.40 meters below the surface (approximately at the level of the rim) were poorly-preserved fragments of another skeleton, with no surrounding jar but in association with a red-slipped tanga.

Jar O, Inajá Plain (fig. 100): The surfaces are orange to tan, with small patches of light gray, cream and dull brown, and a large black fire cloud on the body. The interior surface is more even than the exterior, but the latter has a slight luster in spite of the irregularity. The broken edges show temper to be finely ground sherd. The random inclusion of vegetal material which left dark-gray spots and streaks is probably accidental. The bottom is flat, 21 cm. in diameter, the sides slope outward to the maximum diameter 24 cm. above the base and then slant inward until just below the everted rim. Rim diameter is 71 by 79 cm., the outline being oval rather than circular. Maximum body diameter is 88 cm., total height, 82 cm. Body wall thickness varies between 1.4 and 2.1 cm. The upper rim edge is adorned with two deep, equally spaced grooves.

Upper basin, Joanes Painted (?)*:* The paste has a gray core with scattered ashy spots 3 mm. or less in diameter in addition to sherd temper and small red iron concretions. A white slip was applied to the rim and sides on interior and exterior stopping just below the curve in an irregular line. The unslipped surface is oxblood tan except where blackened on the exterior by fire clouds. The slipped area is also marred on the exterior by black fire clouds and bright-orange patches, resulting from poorly controlled firing. Scattered crackle is present in the slip. Because of prominent smoothing marks remaining on the slip, the unslipped surfaces are smoother, particularly on the interior, which has a low polish. The slip is applied unevenly, varying from paper thinness to 0.5 mm. in thickness.

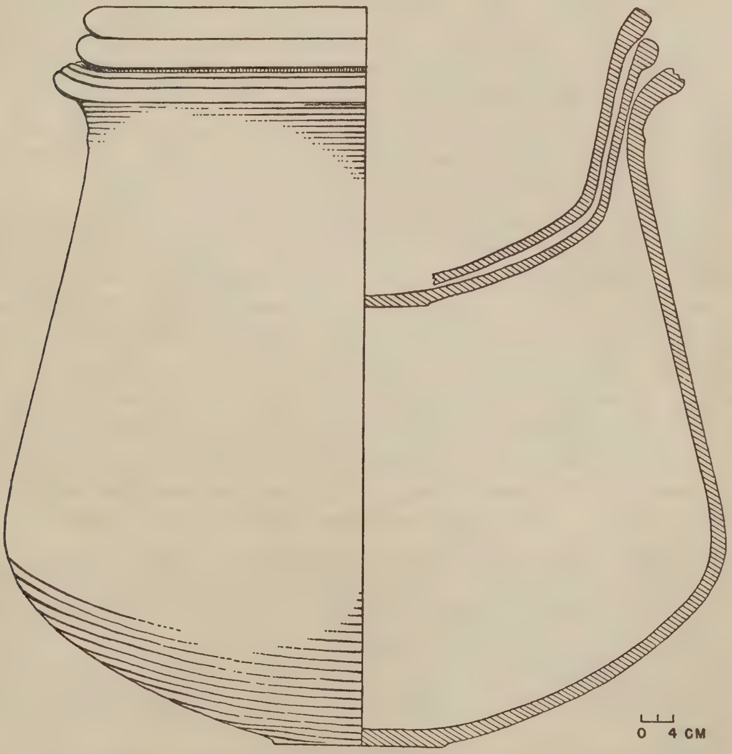

FIGURE 100.—J–14, Mound 1, cut 1, jar O, Marajoara Phase.

It is possible that the slipped area bore a painted design, although no trace of paint remains. The rim diameter is 70 cm., the reconstructed depth 32 cm. Body wall thickness ranges from 1.0 to 1.4 cm. The junction of the coil added to the rim exterior to double the rim thickness is faintly visible in the cross section.

Lower basin, Inajá Plain: Paste poorly mixed with large air pockets. The interior surface is streaked with dark gray and one-third of the exterior is covered with black fire clouds. The remaining surface varies from light tan to light orange to gray. Prominent smoothing marks remain on both surfaces, running parallel to the rim on the upper sides and sweeping from the base upward on the bottom. The exterior of the flat bottom is unsmoothed. Shape is identical to that of the upper basin. Exterior rim diameter is 74 cm.; base diameter, 17 cm., and depth, 30 cm. Body wall thickness ranges from 9–12 mm.

Arari Plain Excised fragment: Surfaces reddish-tan on the exterior except for large black fire cloud and blackened completely on the interior. Although polished, the surfaces remain somewhat uneven. The design, a combination of incised lines and excised areas, is crudely executed with the lines crooked, unevenly spaced and jagged. The fragment has a flat base 20 cm. in diameter and almost vertical sides suggesting rare shape 2. Existing height is 8 cm. The remaining portions of the vessel were not encountered.

Beginning at a depth of 1.55 meters, the soil surrounding the jars became a bright orange red and more sandy than previously. As the depth increased, the earth became increasingly dry. After the removal of jar O the test was continued to a depth of 3 meters. Immediately beneath the jar, the soil was sandy, yellowish brown containing orange streaks and lumps. With increasing depth the color became grayer, with greenish flecks. This sterile soil was similar in appearance to that composing the core of J–15, Mound 14, except for the presence of red particles of mineral origin.

Mound 2, Monte Carmelo.—This mound lies 100 meters east of Mound 1, on the same side of the Rio Anajás (fig. 88). It is somewhat teardrop-shaped, the eastern end being considerably narrower than the western. At the end of the rainy season, it was flooded on all sides and the length was 85 meters, with the orientation running east-west. The width of the western part was 48 meters and of the eastern, 40 meters. The sides slope steeply on the north, west, and south, while the eastern incline is gradual. The maximum height is about one-third of the distance from the west end, and reaches 2 meters. At the same distance from the east end, the elevation is about 1 meter. The top is a leveled area 65 by 10 meters, which slopes toward the east. The major portion of the site was planted with coconut and banana trees, and heavy grass covered the eastern half, making surface collection difficult (pl. 34, *b*). However, parts of large, anthropomorphic, painted jars, excised, incised, painted sherds and tangas of both red-on-white and red-slipped varieties were sufficiently abundant to indicate that this mound functioned as a cemetery.

Because of the eroded condition and extensive cultivation, it was not practical to undertake any excavation. However, we were able to examine two complete vessels that had been recovered by local residents:

Arari Plain Excised bowl (pl. 57, b): Paste is orange with a gray core; well-smoothed, reddish-brown surface, showing faint smoothing marks but even and slick to the touch. The out-curving sides terminated in a direct rim, and the bottom was flattened slightly off center so that the rim sloped and the depth varied from 10.2 to 11.5 cm. Rim diameter was 19 cm.; base diameter, 8 cm. A band of excised design about 3 cm. wide ran around the middle of the exterior. The cutout is deeply gouged leaving a rough surface. The two incised lines that flank it are not evenly parallel, and tend to undulate slightly.

Anajás Plain Incised jar (pl. 51, a): Light-orange surface with scattered gray fire clouds, smoothed but with many irregularities remaining. The paste has a gray core. The incision was done when the surface was leather hard. The lines, which run diagonally in both directions over the upper body, are 2 mm. wide and 1 mm. deep, and were applied with no effort to keep them evenly spaced or closely parallel. The jar is 30 cm. tall, with a flattened base 9 cm. in diameter, a slightly depressed, globular body, a slight, constricted neck and an everted rim, with an exterior diameter of 17 cm. Maximum body diameter is 25 cm.

Mound 3, Bacatal.—This mound is on the right bank of the Anajás, opposite the east end of Mound 1, from which it was separated in May 1949 by 150 meters of flooded river (fig. 88). The land on all sides was inundated leaving an area approximately the shape of a right triangle, with the arms on the south and east and the hypotenuse on the northwest. The maximum north-south extent was 65 meters, the east-west length, 75 meters. The eastern half was higher than the western, with a maximum elevation of 2 meters at the eastern part of the south edge, along the river. Here the bank was steep, having been subjected to yearly erosion; elsewhere, the slope was gradual. The highest part of the mound was occupied by a modern cemetery surrounded by a fence and the remainder was overgrown with trees. Its small size and the sparsity of the sherd refuse indicate that this mound was probably a habitation site. The surface collection produced 1 sherd of Anajás Plain Incised, 1 of Joannes Painted, 8 red-slipped tanga fragments and the remainder plain ware (72 percent Inajá Plain, 28 percent Camutins Plain).

SITE J-15—OS CAMUTINS

The group of artificial mounds along the Igarapé Os Camutins, a small tributary of the upper Rio Anajás, is one of the most famous on Marajó. The large mounds on the lower part of this stream were visited and described by Derby (1879, 1885) and later by Farabee (1921), both of whom made excavations. They mention that other sites exist along the stream, but no details are given. To provide these, a survey was made and 19 additional mounds were mapped, described, and represented by a surface collection (fig. 101). This work was

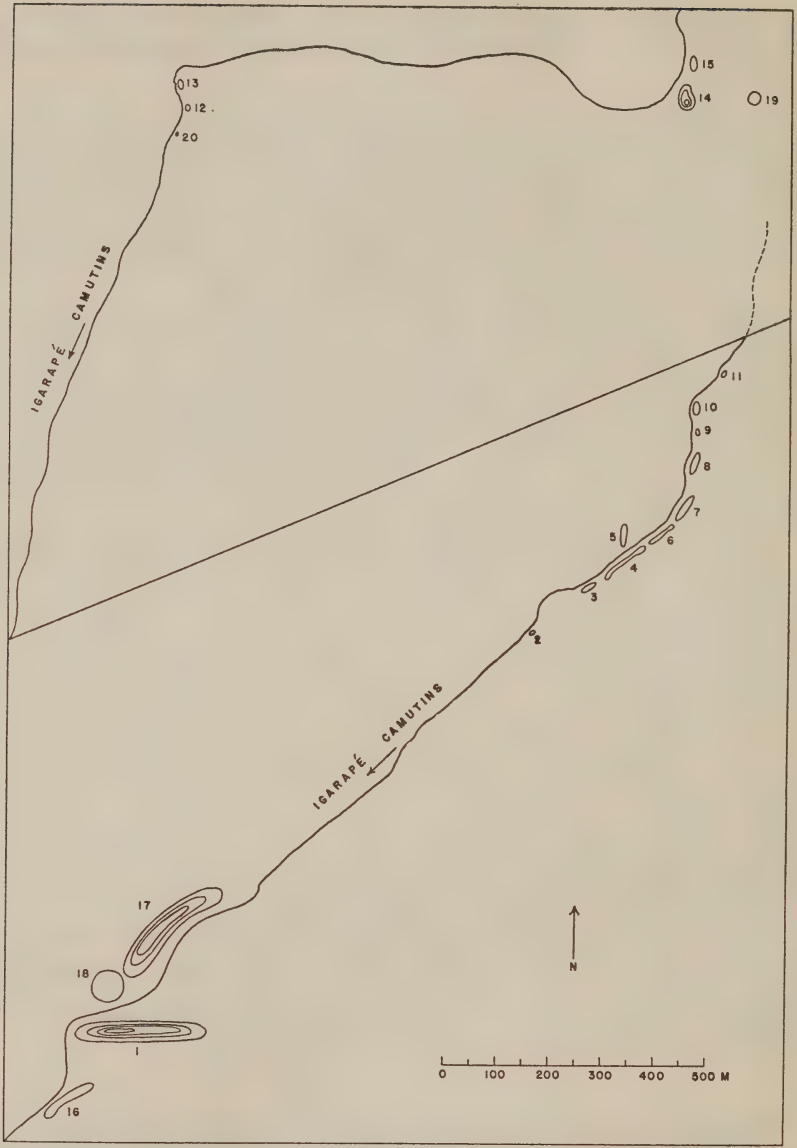
15
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FIGURE 101.—Plan of mounds composing J-15—Camutins, a mound group of the Marajoara Phase.

done at the climax of the rainy season in May, when the water was at its maximum level. All of the mounds were islands approachable only by boat, whereas during the dry season they are connected by land. The dimensions given refer to the area above the high water line; had they been taken during the dry months, an estimated 1 to

2 meters would have been added to their height and corresponding increases to length and width. On the basis of this survey, it was decided to make stratigraphic tests in two of the largest mounds, Mounds 14 and 17, as well as in Mound 1.

Mound 1, Camutins.—This is on the left bank of the *igarapé*, and is one of two cemeteries in the group. It has an overall length of 255 meters and a width of 30 meters, with rounded ends (fig. 102). The slopes are steep, with a slant of about 45 degrees along the sides and 25 to 30 degrees at the northeast end. The summit is a flattened ridge varying between 5 and 11 meters in width and from 8.5 meters above the water level on the east end to 10 meters at the center and 9.5 meters at the west end. The entire mound is covered with forest, including *guajará* and cacao trees claimed by the present populace to be of Indian origin (pl. 33, *a*), The surface is abundantly littered with sherds of all types, including numerous tanga fragments, adornos, and plain and decorated wares. Erosion has been greatest on the north side, which borders on the river, and has produced such a concentration of surface material that the slope is literally paved with sherds, a high percentage of which are plain ware.

Three excavations were made along the summit in an effort to obtain stratigraphic information. Cut 1, 1.5 meters square, was 3 meters from the slope on the river side and one-third of the distance from the east end of the ridge. Sherds were present on the surface, although in less profusion than on the more eroded slope. For the first 30 cm., the soil was very wet, dark-gray clay streaked with black, and containing roots and small lumps of red clay, apparently sunbaked. Sherds were sparser than had been expected on the basis of the surface condition and since there were too few to provide a basis for stratigraphic analysis the material was not retained by levels after 30 cm. As depth continued, the soil became light gray and more sandy. The upper edge of an Ararí Red Excised vessel, jar A, was encountered at 75 cm., the base resting 1.10 meters below the surface. Sherds from a shallow bowl, white-slipped on the interior, red-slipped on the rim top and plain on the exterior, were found in a position over the jar that indicated it served as a lid. Ten centimeters to the north of the jar base, a small, white-slipped jar, B, was found upside down. Both vessels contained only wet, sandy soil.

Jar A, Arari Red Excised (pl. 61, b): The entire exterior surface is covered with a red slip and decorated with a complex excised pattern. The interior is white slipped and both surfaces are well smoothed and even. The paste has a gray core. Although the rim was broken off by earth pressure, a sufficient number of fragments were recovered to permit its restoration. The jar was 38 cm. tall, 35 cm. in maximum body diameter, and 38 cm. in external rim diameter. It has a flat bottom, 20 cm. diameter, a globular body and a short, outflaring neck 9 cm tall.

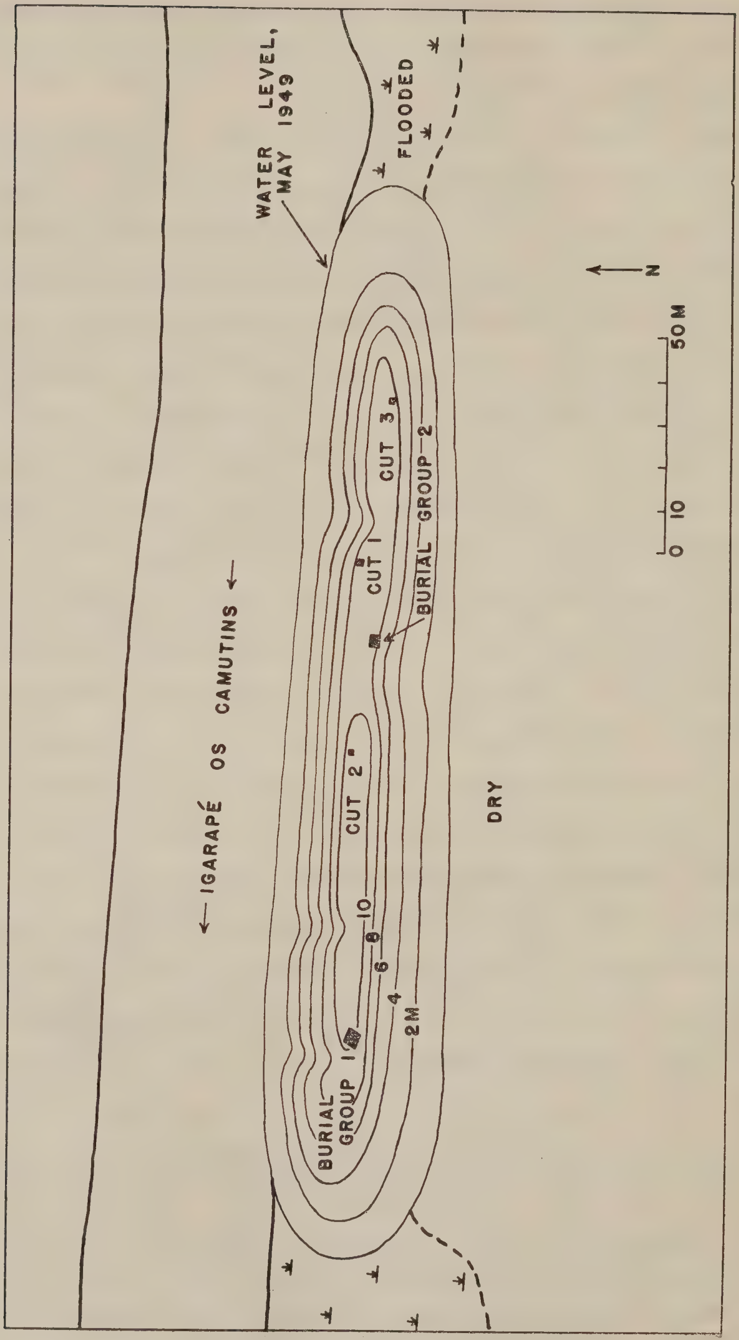
WATER LEVEL, MAY 1949
FLOODED
IGARAPÉ OS CAMUTINS
CUT 3
CUT 1
CUT 2
BURIAL GROUP 2
BURIAL GROUP 1
10
8
6
4
2 M
DRY
N
0 10 50 M

FIGURE 102.—Plan of J–15, Mound 1, Marajoara Phase, showing the locations of excavations.

The lid was also 38 cm. in rim diameter and had a flat bottom 11 cm. in diameter.

Jar B, Joanes Painted (pl. 67, a): Exterior and interior surfaces are smoothed, leaving polishing tracks and many irregularities, and slipped with white. Beneath the slip, the surfaces are light cream or tan, and the paste has a light gray core. The vessel has a short, collarlike rim, 2.2 cm. tall, a globular body and a rounded base. The exterior surface of the collar was painted red. Maximum diameter of the body is 18.0 cm., of the rim 14.5 cm. Total height is 10 cm.

Whitish sand appeared at a depth of 1.10 meters and was sterile to 1.50 meters, where the cut was terminated. Sherds by levels totaled:

Level .00–.15 m.: 79 Inajá Plain, 93 Camutins Plain, 7 Ararí Plain Excised, 1 Ararí Red Excised, 1 Anajás Red Incised, 3 Anajás Plain Incised, 19 Joanes Painted, 3 Carmelo Red, 4 modeled sherds, 5 red-on-white, and 3 red-slipped tanga fragments.
Level .15–.30 m.: 12 Inajá Plain, 25 Camutins Plain, 1 Ararí Plain Excised, 2 Ararí Red Excised, 5 Joanes Painted, 4 Carmelo Red, and 3 red-on-white tanga fragments.
Level .30–1.00 m.: 25 Inajá Plain, 24 Camutins Plain, Ararí Red Excised sherds from 4 different vessels, 1 Goiapí Scraped, Joanes Painted sherds from 3 bowls, and 2 red-slipped tanga fragments.

Cut 2 was placed in the center of the mound, about 2 meters from the summit on the river side. It was 1.5 meters square and excavated in 15-cm. levels.[18] Because of the steepness of the slope at this point, the first level was measured off on the uphill side and leveled out on the downhill side to permit the removal of an equal amount of dirt from all parts of the cut in succeeding levels. In the first level, the soil was dark-gray wet clay, roots were thick and sherds large and abundant. Between 15 and 45 cm., the soil became darker and the sherds less numerous. At 50 cm. the soil became light gray on the uphill side, but in the remainder of the cut it continued dark until 75 cm. From this point until sterile soil was reached at 2.10 meters, the sherds were mixed in light-gray or whitish, sandy clay streaked with light gray, and containing scattered charred bits of wood and small pockets of ash. From 2.10 to 2.55 meters the yellowish, sandy clay contained charcoal, but no sherds or lumps of burnt clay.

Two unusual objects were found in cut 2. Level 0.75–0.90 meter produced a worked sherd of Camutins Plain (fig. 103, *b*). It was roughly oblong, 4.8 by 3.5 cm., 2.4 mm. thick at the edges and 4.5 mm. thick at the center, slightly convex and smooth on both surfaces. The edges had been rounded and there was a shallow groove in each end, as though to secure a string wound or tied around it. An eccentrically shaped Inajá Plain object came from level 1.05–1.20

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[18] Because of the small sample per level, 2 levels were combined for stratigraphic analysis of the pottery types (Appendix, table 40).

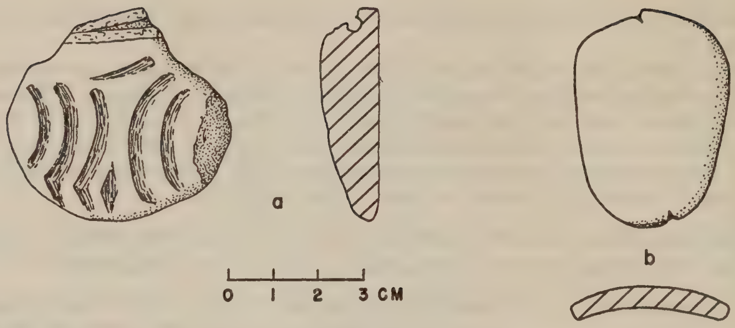

FIGURE 103.—Artifacts from J-15, Mound 1, cut 2, Marajoara Phase: *a*, Eccentric pottery object. *b*, Worked sherd.

meters (fig. 103, *a*). It was circular, flat on one surface and convex on the other. An extension at one side was drilled horizontally and broken off at the hole. The flat side was rough and uneven, and the convex one bore a design of parallel grooves curving from the center to either side. Width was 4.9 cm., length from the broken edge to the opposite end 4.7 cm., maximum thickness 1.3 cm. The object was crude both in form and decoration, possibly a crude pendant.

Cut 3, also 1.5 by 1.5 meters square, was excavated 8 meters from the east end of the summit and 2 meters from the center on the side away from the river. For the first 4 levels the soil was medium brown, with some ash in level .45-.60 meters. In level .60-.75 meters it became darker, and between .75 and .90 meters the soil was streaked with fire-burnt clay. Between 0.92-1.10 meters, a bright-red band of burnt sand and clay intermixed with black ash occupied one corner of the cut.[19] Below 1.10 meters and continuing to the bottom of the test (1.50 meters) the soil was pure white, sandy clay with no ash or sherds.

The slightly flattened base of a Camutins (?) Plain jar was encountered at 1.00 meters. The vessel had a globular body, 45 cm. in maximum diameter and 50 cm. tall. The everted rim was broken off, but fragments were found in the fill. The red-slipped tanga inside was broken but all fragments were present (pl. 82, *d*). This last level (0.75-0.90 m.) also produced a number of sherds from a small, anthropomorphic, Joanes Painted jar with an insloping neck and a slightly flaring rim with a diameter of 18 cm. Facial features were indicated by low applique on the neck, outlined with red-painted lines. Another sherd from this vessel was a small, zoomorphic adorno.

Burial Group 1 designates a place on the west end of the ridge, on the south side of the summit, where the *caboclos* had removed several large jars. Part of another (jar 1) was visible at the edge of the old excavation. Removal of the surrounding dirt showed it to be Joanes Painted, 70 cm. tall (rim broken off), with a flat bottom 15 cm. in diameter, rounded sides, a flat shoulder, and an insloping neck. The structural weakness of the angular shoulder and the pressure of the earth had broken the jar into large pieces. The interior was filled with wet dirt containing flecks of charcoal, miscellaneous sherds and, at the bottom, a complete, red-slipped tanga. The base of this jar was 1.15 meters below the existing surface of the mound; the rim was 45 cm. below the surface.

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[19] Because of the small sherd sample per 15-cm. level, 2 levels were combined for stratigraphic analysis of the pottery types (Appendix, table 40).

Jar 2, a globular-bodied jar 36 cm. in diameter with a low-relief snake twisting over the exterior, was resting in a break in the neck of jar 1, so that its bottom was supported by the shoulder of the latter. Jar 3, Inajá Plain and 30 cm. tall, was about 20 cm. to the west of jar 1 with its rim 28 cm. below the surface. The dirt filling it contained much black ash from a cremation.

Jar 4, a second large Joanes Painted jar, was at the north side of Jar 1, with its broken rim 60 cm. below the surface. The reconstructed rim diameter was 54 cm., total height 70 cm., neck height 30 cm., minimum neck diameter 37 cm. A shallow, broken Ararí Plain Excised bowl, 42 cm. in rim diameter, was inverted over the top as a lid. The dirt inside the jar was very muddy, a fact which had contributed to the destruction of the skeletal remains. With the latter were scattered small vessel sherds, fragments of charred wood and four sherds from a single red-on-white tanga. Dr. Marshall T. Newman, United States National Museum (pers. commun.), made the following analysis of the skeletal remains:

> Three mandibular, two maxillary fragments, four teeth, one petrous, and a few eroded sections of long bone shaft. All the skull parts and teeth are left side, and belong to the same individual. This individual had erupted and worn second molars, but shows an unerupted third molar. Therefore, the age should be more than 12 but less than about 18 years. The small size of the mandibular fragments suggests female.

Jar 5, Anajás White Incised, was above and between jar 1 and jar 4, with its rim 35 cm. below the surface. It contained bone fragments in a poor state of preservation, some of which Newman could identify as human and adult. Others were identified as crocodilian by Dr. Doris M. Cochran of the Department of Zoology, United States National Museum.

Jar 5, Anajás White Incised (*pl. 55, a*): The jar was noticeably asymmetrical, with a cylindrical neck 24 cm. tall, a squat, rounded body 36 cm. in diameter and 14 cm. tall, a flat bottom 14 cm. in diameter and an everted, exteriorly thickened rim 31 cm. in diameter. The entire exterior was white slipped and covered with an incised design in which triple parallel lines outlined rectangular, hexagonal, and stepped panels containing simple motifs drawn with single lines. A contrasting color effect was produced by cutting the incisions through the slip into the orange undersurface, and was most pronounced in the small squares and triangles at the corners and ends of the single lines. The motif is typical of that employed on Pacoval Incised, but the red retouching of the lines has been omitted.

Burial Group 2, like Burial Group 1, was an excavation begun by the *caboclos*, who had removed a large painted jar. This spot is on the south side of the ridge, about 25 meters southeast of cut 2. Two small jars, their upper edges about 38 cm. below the surface, were found by cutting away the sides of the earlier excavation. Both vessels were filled with wet soil, which contained neither bone fragments nor sherds.

Jar A, Inajá Plain, had a flat bottom 15 cm. in diameter, from which the sides flared outward to the maximum diameter of 31 cm. at a height of 11 cm., and then curved inward to the neck, which was 18 cm. in diameter. With the rim missing, the existing height was 26 cm.

Jar B, Joanes Painted (*pl. 73, b*), was 2 meters north of jar A. The body was globular, with a short, outslanting neck and an everted, exteriorly thickened rim. Measurements include: total height, 38 cm.; rim diameter, 35 cm.; maximum body diameter, 36 cm.; diameter at base of neck, 23 cm.; neck height, 9 cm. A white slip covered the exterior. The neck was decorated with a stylized face in low relief, with the background painted red. A red-painted design covered the body.

The surface collection from Mound 1 does not represent a random sample as it does on the other Camutins mounds. Sherds were present in such abundance that it was felt that a better idea of the range of material present would be secured by picking up striking decorated sherds and unusual or ornamental plain ware rims. This technique amassed examples of the following decorated wares: Anajás Plain Incised, Anajás White Incised, Anajás Red Incised, Arari Plain Excised, Arari Red Excised, Arari White Excised, Arari Double-slipped Excised, Goiapí Scraped, Guajará Incised, and red-slipped, and red-on-white tangas (pl. 82, *a–b*). Both Inajá Plain and Camutins Plain were well represented, with forms including stools, tall pot rests, straight-sided and flat-bottomed bowls with 4 "dimples" in the walls, a funnellike bowl with an open bottom, and small bowls (pl. 67, *b*) and jars of all descriptions, generally with rims ornamented by nubbins, adornos, notches, or applique. Also included were two small figurines (pl. 79, *a–b*), an ear plug (fig. 134, *a*), and 2 labret (?) fragments (fig. 135). Two stone objects were found: a small, flat, smooth stone about 5 cm. in diameter, with deep crisscross grooves on both surfaces produced by rubbing with a stick (fig. 138), which came from the vicinity of Burial Group 1, and a miniature diorite ax (fig. 132, *a*).

Mound 2.—This is the first in the series of habitation sites scattered along the left bank of the Igarapé Camutins upstream from Mound 1.

It is separated from Mound 1 by approximately 2 km. One of the smallest of the series, it is at present 5 meters long, 50 cm. wide and 75 cm. high. It has been badly trampled by cattle and was surrounded by water at the climax of the rainy season. A few plain-ware sherds (Appendix, table 42) were scattered in the soil to a depth of 25 cm.

Mound 3.—This mound, 75 meters upstream from Mound 2, is approximately oval, 32 meters long, and 8 meters wide (fig. 104). The north side, subject to erosion by the river, rises almost vertically, while the other sides slope gradually and then rise at an angle of 30

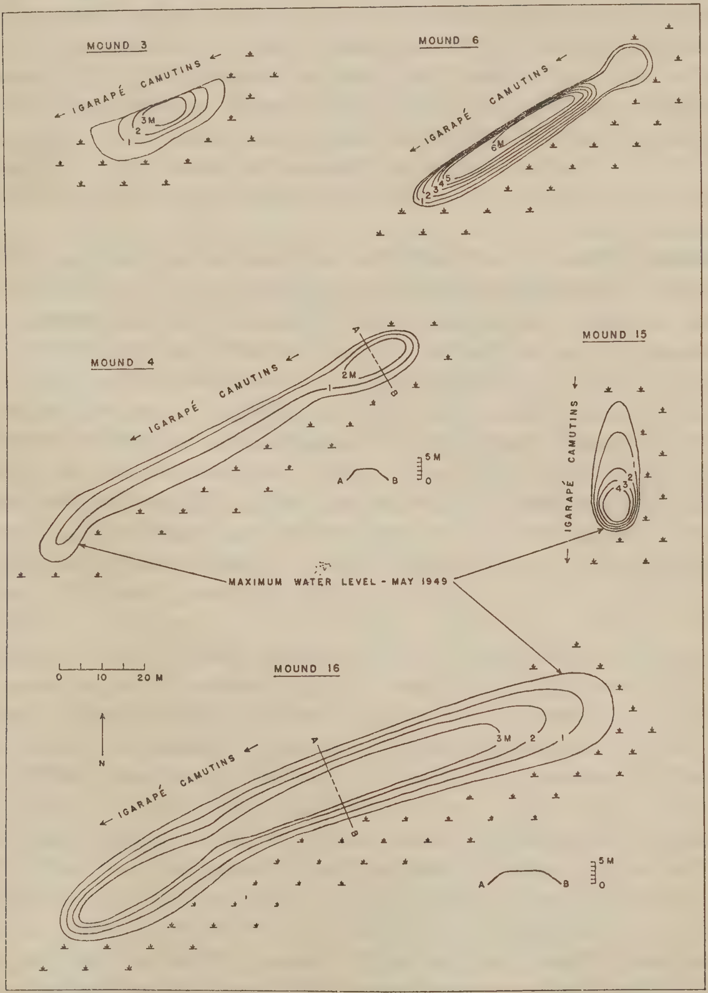
MOUND 3
IGARAPÉ CAMUTINS
3M
2
1
MOUND 6
IGARAPÉ CAMUTINS
6M
5
4
3
2
1
MOUND 4
IGARAPÉ CAMUTINS
2M
1
A
B
5M
0
MOUND 15
IGARAPÉ CAMUTINS
4
3
2
1
MAXIMUM WATER LEVEL - MAY 1949
MOUND 16
0 10 20 M
N
IGARAPÉ CAMUTINS
3M
2
1
A
B
5M
0

FIGURE 104.—Detailed plans of J–15, Mounds 3, 4, 6, 15, 16, habitation mounds of the Marajoara Phase.

to 45 degrees to form the central part of the mound, an area 10 by 5 meters and reaching a height of 3 meters above the high waterline. The soil is light-colored, sandy clay with areas of reddish, burnt sand and black charcoal fragments. Sherds are most abundant in the highest part of the mound, although a few are scattered on the flanks. Tests along the bank indicate that they are present to a depth of 2 meters (Appendix, table 42).

Mound 4, Sacrario.—This is a long, low, thin mound (fig. 104) curved to follow a slight bend in the river 20 meters above Mound 3. It is 100 meters long and varies from 5 to 8 meters in width. The surface is 1.25 to 1.50 meters above high water level except at a knoll at the east end, 25 by 7 meters, which rises to 2.50 meters. At the height of the rainy season the *campo* surrounding it on three sides is beneath 50 cm. of water. The soil is sandy clay, darker than that composing Mound 3. Predominantly plain ware sherds (Appendix, table 42) are distributed sparsely over the entire surface. Present growth includes a few large trees, but consists mainly of small, scrubby brush and trees.

Mound 5, Sacacão.—This is the only mound on this part of the river that was constructed on the right bank. Its lower end is directly opposite the upper end of Mound 4. At the present time it measures 45 meters long by 8 meters in width and from 1.00 to 1.50 meters in height. More than any of the other mounds surveyed, this one seems to have suffered from the trampling of cattle seeking refuge from the flooded *campo* and it probably was originally somewhat higher. The soil is light-gray, sandy clay and sherds are present over the entire surface (Appendix, table 42). Fifteen large and many smaller trees cover it. The surrounding *campo* is flooded, but the water appeared to be unusually deep near the mound, possibly the result of dirt for mound construction having been removed from the area.

Mound 6.—This mound, 8 meters above Mound 4, was separated from the latter in May by a small inlet of water. The *campo* on the southeast side was muddy but not flooded. This mound is formed by a narrow elevation 50 by 8 meters in horizontal dimensions and 5.00 to 6.50 meters high, and a low, circular area 11 meters in diameter and 1.75 meters high, the two sections being joined by a necklike construction 4 meters long and 1 meter in elevation (fig. 104). The river has cut away the west side so that it rises nearly vertically, while the protected slopes are more gradual. The surface is covered with thick grass, spiny palm and brush, and a few large trees. Sherds are not easily found, possibly partly because of the sod covering, and most of the sample (Appendix, table 42) came from two spots and from a depth of 10–15 cm., which was below the grass root mat.

Mound 7, São Bento.—This resembles Mound 6 in general appearance and vegetation. It is separated from the upper end of the latter by 6 meters of flooded *campo* and is approachable only by boat during the rainy season. Oval in outline, it measures 60 by 15 meters, with gentle slopes from the summit to the water's edge except on the eroded river side. Maximum height is 4 meters, maintained over an area 30 by 5 meters in the center of the mound. Sherds are abundant, especially in the eroded bank (Appendix, table 42).

Mound 8.—This is 45 meters long and 10 to 12 meters wide, and is 40 meters upstream from Mound 7. The soil is light-gray to whitish, sandy clay with bright fire-reddened zones. Sherds are moderately abundant in a layer averaging 25 cm. in depth (Appendix, table 42). The bank rises sharply to an elevation of 3 to 4 meters on the south and west sides, and slopes off gradually to the north and east, forming a level platform 30 by 6 meters. Trees, small bushes, and a little grass comprise the vegetation cover.

Mound 9.—This is 30 meters above Mound 8, is oval, and measures 20 by 10 meters. The sides rise steeply to a level top, 7 by 8 meters in diameter and 5 meters above the flooded *campo*. Growth includes one large tree, small bushes, and patches of tall grass. Sherds are not abundant on the surface (Appendix, table 42).

Mound 10.—This mound is covered with forest, and is separated from Mound 9 by a deep, low area 25 meters wide. The site is 30 by 15 meters, with moderately steep sides rising to a height of 3.75 meters. The soil is reddish-brown loam, less clayey than in the preceding sites, and no sherds could be seen on the surface. Random digging to secure a sherd sample (Appendix, table 42) uncovered a broken jar toward the southwest end of the summit. It had fallen toward the northwest and inside was a complete Inajá Plain stool, lying upside down (pl. 83, *a*).

Mound 11.—This is 18 by 14 meters, and is 75 meters upstream from Mound 10. It is 1.75 meters high and pottery is abundant in the eroded northwest bank in a zone from 20–100 cm. below the surface (Appendix, table 42). Except for scattered small trees and a strip of wood along the southwest side, the cover is short grass (pl. 32, *a*). Soil composition is like that of Mound 10, a reddish-brown loam.

Mound 12, Carmo.—This mound is 2 km. above Mound 11, on the same side of the *igarapé*, which at this point was 20 meters wide and said to shrink to a width of 10 meters during the dry season. This mound is nearly circular, 12 meters in diameter and 1.25 meters high. A fringe of trees runs around the edge and the center is grassy. Soil is reddish-brown, sandy clay and sherds are abundant under the sod layer (Appendix, table 42). As is typical during the rainy season, the mound was completely surrounded by water.

Mound 13.—This, like the other forest-covered mounds, is camouflaged by the trees so that it would be easily overlooked by a casual observer. It is in a bend in the stream 25 meters above Mound 12, and is isolated on the other side by the flooded *campo*. At present, dimensions are 18 by 10 meters and 1.50 meters high. A border of trees grows on the bank, but the center is grassy. Sherds are exposed in the eroded north end (Appendix, table 42).

Mound 14, Inajasal.—This is 1 km. east of Mound 13 (fig. 105). It is the largest of the habitation sites, being 51 meters long, 25 to 35 meters wide, and 5.75 to 6.25 meters high along the summit.[20] The slopes are steep and covered with trees except at the center of the east side. The summit and the east slope are grassy (pl. 32, *b*). Because of its size and the abundance of the surface sherd refuse, this mound was selected for stratigraphic excavation. A cut 1.5 meters square was begun near the center of the ridge and taken

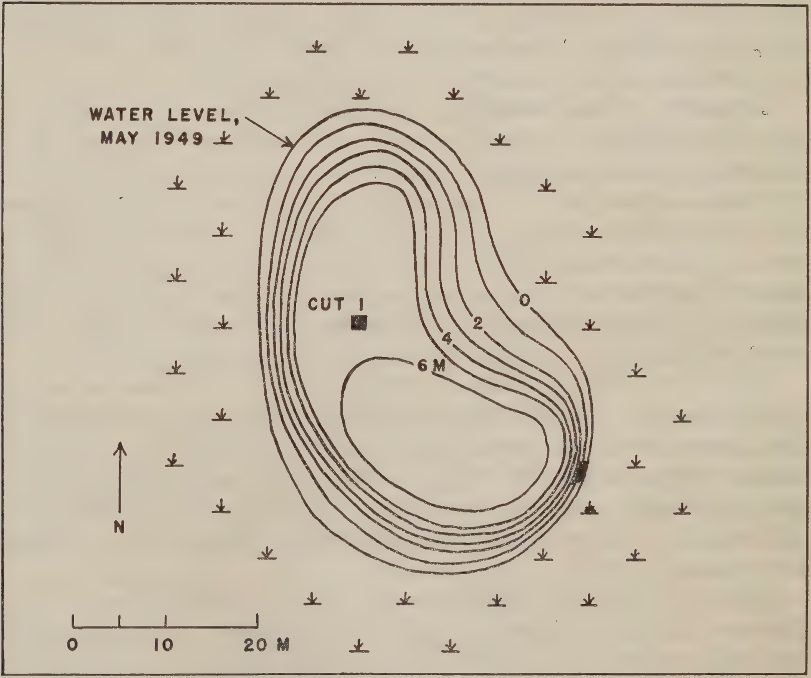

FIGURE 105.—Detailed plan of J–15, Mound 14—Inajasal, a habitation mound of the Marajoara Phase, showing the location of cut 1.

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[20] Hilbert (1952, p. 10), who returned in the dry season when the base was exposed, gives the actual height as 7.00 to 7.25 meters. At low water the river is 75 meters away.

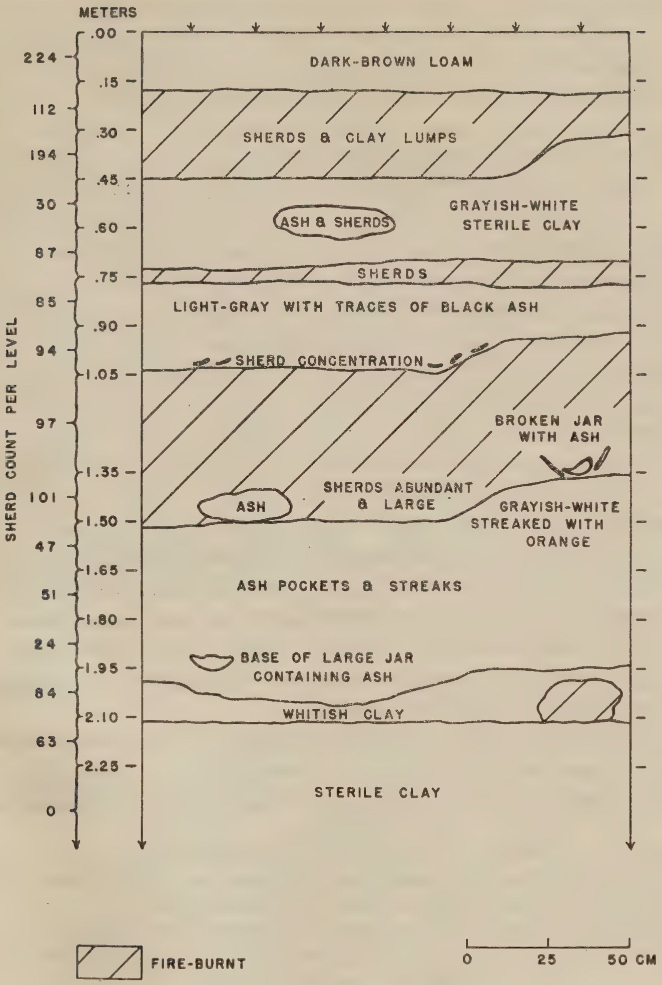
METERS
.00
.15
.30
.45
.60
.75
.90
1.05
1.35
1.50
1.65
1.80
1.95
2.10
2.25
SHERD COUNT PER LEVEL
224
112
194
30
87
85
94
97
101
47
51
24
84
63
0
DARK-BROWN LOAM
SHERDS & CLAY LUMPS
ASH & SHERDS
GRAYISH-WHITE STERILE CLAY
SHERDS
LIGHT-GRAY WITH TRACES OF BLACK ASH
SHERD CONCENTRATION
BROKEN JAR WITH ASH
SHERDS ABUNDANT & LARGE
ASH
GRAYISH-WHITE STREAKED WITH ORANGE
ASH POCKETS & STREAKS
BASE OF LARGE JAR CONTAINING ASH
WHITISH CLAY
STERILE CLAY
FIRE-BURNT
0
25
50 CM

Figure 106.—Profile of west face of cut 1, J–15, Mound 14, Marajoara Phase.

down in 15-cm. levels (fig. 106). Sherds were abundant in the dark-brown loam, which extended beneath the sod to a depth of about 18 cm. Then began a stratum of light orange, which became brighter orange with increasing depth; sherds, as well as clay lumps, continued numerous. At 35 cm. light, grayish-white soil appeared in the northwest corner and spread over the entire cut at the beginning of the next level at 45 cm. From here to a depth of 70 cm. the soil continued sandy and whitish gray, with streaks and small pockets of bright orange. A pocket of black ash at the west side of the cut in level 0.45–0.60 m. produced the majority of the sherds from that level. From 72 to 77 cm. was a second fire-burnt layer containing sherds. Another layer of light, grayish-white soil with traces of black ash and sherds in poor condition extended from 77 to 90 cm. in the northwest corner and to 1.04 meters in the rest of the cut. The majority of the sherds from level 0.90–1.05 meters were concentrated at the bottom of this stratum, just above a third burnt-orange layer. The latter, somewhat thicker than those above it, became browner in level 1.35–1.50 m. Sherds from an ash-filled jar were removed from the northwest wall at this level, and an ash pocket was encountered on the opposite side of the cut. Sherds were abundant and large. Beginning at about 1.45 meters in the northwest corner and at 1.50 meters in the rest of the cut was another light-grayish stratum. The soil was streaked with orange and contained pockets of black ash about 20 cm. in diameter. This variegated appearance, with bright orange, reddish orange, light tan, whitish gray and streaks and pockets of black ash continued to a depth of 1.95 to 2.05 meters. A large base sherd containing black ash was found at 1.95 meters, but sherds were generally sparse. Except for a pocket of burnt orange in the northwest corner, the soil below level 1.95–2.05 m. was moist, whitish clay, although sherds still appeared. At 2.12–2.15 meters there was a transition to compact, whitish, dry and flaky clay flecked with gray, yellow, and hard orange particles, which was sterile and consistent, and comprised the core and foundation of the mound.

In the sherd count by levels, the sparsity of decorated sherds is notable by contrast with the totals from Mound 1, cut 1 (p. 283):

Level 0.00–0.15 m.: 75 Inajá Plain, 140 Camutins Plain, 8 Anajás Incised, 1 Joanes Painted.
Level 0.15–0.30 m.: 19 Inajá Plain, 93 Camutins Plain.
Level 0.30–0.45 m.: 30 Inajá Plain, 163 Camutins Plain, 1 Joanes Painted.
Level 0.45–0.60 m.: 8 Inajá Plain, 22 Camutins Plain.
Level 0.60–0.75 m.: 52 Inajá Plain, 32 Camutins Plain, 3 Joanes Painted.
Level 0.75–0.90 m.: 43 Inajá Plain, 40 Camutins Plain, 2 Joanes Painted, 2 red-slipped tanga sherds.
Level 0.90–1.05 m.: 20 Inajá Plain, 51 Camutins Plain, 3 Joanes Painted.
Level 1.05–1.35 m.: 41 Inajá Plain, 55 Camutins Plain, 1 Joanes Painted.
Level 1.35–1.50 m.: 54 Inajá Plain, 45 Camutins Plain, 2 Anajás Incised.
Level 1.50–1.65 m.: 25 Inajá Plain, 19 Camutins Plain, 3 Joanes Painted.
Level 1.65–1.80 m.: 18 Inajá Plain, 29 Camutins Plain, 4 Joanes Painted.
Level 1.80–1.95 m.: 15 Inajá Plain, 8 Camutins Plain, 1 Joanes Painted.
Level 1.95–2.10 m.: 52 Inajá Plain, 29 Camutins Plain, 1 Anajás Incised, 2 Joanes Painted.
Level 2.10–2.25 m.: 48 Inajá Plain, 12 Camutins Plain, 1 Anajás Incised, 2 Joanes Painted.

Mound 15.—This mound, 300 meters above Mound 14, is the last site on this part of the *igarapé*. It is 30 by 11 meters, with the sides rising steeply at the south end to a knoll 8 meters in diameter and

4.50 meters high, and sloping off gradually toward the north end (fig. 104). The soil is dark gray to a depth of between 25 and 50 cm., and then becomes light, sandy clay. Sherds are sparse except on the steep bank (Appendix, table 42). Heavy tree growth on the edges conceals the mound from the passer-by.

Mound 16, Tesinho.—This is about 250 meters below Mound 1, on the same (left) bank of the *igarapé.* It and the adjacent area are covered with forest, which except on the mound itself was under water at the time of our visit. The artificial elevation has an area 140 by 16 meters, with the sides sloping steeply except at the northeast end (fig. 104). The maximum height, maintained over an area approximately 100 by 5 meters, is 3.20 meters. Sherds were scattered over the surface (Appendix, table 42) and were said to be abundant along the north side below the flood level. Protected from the invasion of cattle by the forest extending between it and the *campo,* it has accumulated a relatively thick undergrowth.

Mound 17, Belém.—This mound, lying almost directly opposite Mound 1, is another cemetery. It measures 250 by 59 meters, and attains a height of 6.40 meters (fig. 107). At the time of our visit, the lower end had been cleared for cultivation but the remainder of

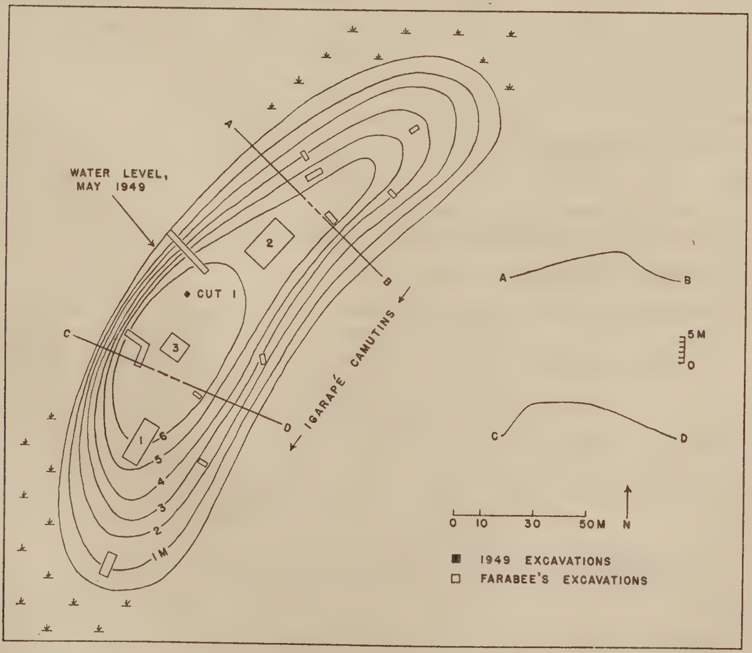

FIGURE 107.—Detailed plan of J–15, Mound 17, a Marajoara Phase cemetery, showing location of excavations.

the site was covered with forest, although none of the trees was exceptionally large (pl. 33, *b*). Many small sherds are scattered over the bank toward the river, where erosion has washed off the humus layer. The side away from the river levels down into forest, which is boggy but not inundated during the rainy season. Inquiries among the *caboclos*, one family of which was living on the mound, elicited the information that no complete jars had ever been found.[21] The unusually large size and the fact that decorated types were more abundant than on other habitations indicated the advisability of more extensive examination.

A stratigraphic cut 1.5 meters square was excavated near the center in 15-cm. levels.[22] For the first 26 cm., the soil was dark-gray loam containing small but abundant sherds. From here to between 45 to 50 cm., the soil color was light tan sprinkled with black wood ash, beneath which was a layer of blackish ash about 5 cm. thick. From 50 to 70 cm., the soil became lighter tan, with a streaked appearance, and contained ash and burnt clay lumps. Sherds were more numerous than in the previous levels. For the next 10 cm., pockets of black appeared sporadically. At 80 cm., began a stratum of yellowish-white sand that contained relatively few sherds. Between 0.95 to 1.10 meters the color became black once more. A burnt-red layer, streaked with black, occupied the region between 1.10 to 1.20 meters, followed by a thin band of black ash 1 to 2 cm. in thickness. Underlying this and continuing to the maximum depth tested (3.25 meters) was the sterile core of the mound, composed of light, yellowish-white, sandy clay, containing charcoal particles in the upper 40 cm., but below that free from refuse mixture. The only pottery artifact was a spoon (pl. 81, *e*), which came from level .60–.75 m. The sherd totals per level reveal the frequency of decorated sherds and tanga fragments typical of Marajoara Phase cemetery sites:

Level .00–.15 m.:[23] 40 Inajá Plain, 113 Camutins Plain, 2 Anajás Incised, 7 Joanes Painted, 4 red-slipped tanga fragments.

Level .15–.30 m.: 14 Inajá Plain, 24 Camutins Plain, 3 Ararí Excised, 1 Anajás Incised, 2 Guajará Incised, 7 Joanes Painted, 1 red-slipped tanga fragment.

Level .30–.45 m.: 66 Inajá Plain, 74 Camutins Plain, 5 Ararí Excised, 1 Anajás Incised, 1 Guajará Incised, 2 Joanes Painted.

Level .45–.60 m.: 28 Inajá Plain, 25 Camutins Plain, 1 Ararí Excised, 1 Anajás Incised, 6 Joanes Painted, 3 red-on-white tanga fragments.

Level .60–.75 m.: 76 Inajá Plain, 68 Camutins Plain, 4 Ararí Excised, 1 Anajás Incised, 14 Joanes Painted, 3 Goiapí Scraped, 14 red-slipped and 8 red-on-white tanga fragments.

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[21] This is contradicted by Farabee's findings (described on pp. 298–299).

[22] This is in the area where Farabee first dug and found only sherds (see p. 298).

[23] Because of the small totals for many of the pottery types in 15-cm. levels, 2 levels were combined for the stratigraphic analysis of pottery trends (Appendix, table 42).

Level .75–.90 m.: 95 Inajá Plain, 13 Camutins Plain, 5 Ararí Excised, 1 Anajás Incised, 4 Joanes Painted, 3 red-slipped and 5 red-on-white tanga fragments.
Level .90–1.05 m.: 93 Inajá Plain, 6 Camutins Plain, 10 Joanes Painted, 6 red-slipped tanga fragments.
Level 1.05–1.20 m.: 25 Inajá Plain, 7 Camutins Plain, 5 Joanes Painted, 2 red-slipped and 2 red-on-white tanga fragments.

Mound 18, Arraial.—This is separated from the lower end of Mound 17 by a strait 7 meters wide and 50 cm. deep at highest water. It is almost circular, 68 meters in diameter and sloping gently toward all sides from a maximum height of 3.20 meters at the center. Sherds (Appendix, table 42) are abundant in a path that runs across the center and are scattered over the whole surface. Forest with thick undergrowth blankets the site and the cultural refuse is covered with humus except at the edges where erosion has uncovered whitish sand.

Mound 19.—This is a low, round mound 100 meters east of Mound 14, and is 25 meters in diameter and 0.75 to 1.00 meters above high water level. It is covered with *araça*, high grass and a few small trees; the soil is black to gray to brown. No sherds are visible on the surface, but a test produced them just beneath the root mat. Too few were recovered to provide an adequate sample for seriation.

Mound 20.—This mound, lying between Mounds 11 and 12, has been almost completely eroded away. Its present elevation is 50 cm. and its area 5 by 2 meters (at high water). A smaller nubbin about 2 meters in diameter projecting above the water 5 meters upstream is probably another remnant of this same mound. These conditions did not permit the collection of a sherd sample.

DATA FROM OTHER INVESTIGATIONS

Although it has been said that "more than a hundred artificial mounds are now known" on the Island of Marajó (Mordini, 1934 a, p. 62; Howard, 1947, p. 47; Meggers, 1948, p. 153), it should be realized that the word "known" is used in a somewhat indefinite sense. No single individual is acquainted with all, or even with a fraction of this total, and three-quarters of them have never been so much as mentioned on any printed page, much less located and described. "Known" must be understood, therefore, as referring mainly to awareness of the existence of these sites on the part of the local residents and *fazenda* owners. The importance attached to them by the owners and the prestige derived from owning a good one, as well as the possibility of the same site being reported by several different people, have perhaps increased the number "known" beyond the actual total figure. There is the greater probability, however, that far more exist than are reported, since those listed below are predominantly cemeteries and the ratio of habitation mounds to cemeteries is 13:1 for Fortaleza and 18:2 on the lower Camutins.

While the present census is incomplete, the making of a more accurate compilation would require the better part of a year, adequate facilities for transportation, and the cooperation of all of the land owners in the area, a set of conditions that will probably never be fulfilled. Fortunately, such complete knowledge does not appear to be necessary for the preliminary reconstruction and interpretation of Marajoara culture. The mounds that are known show sufficient consistency to make it almost certain that when others are recorded in the future they will not reveal a basically different pattern of culture. This section summarizes all of the scientific information available on Marajoara sites and in order to facilitate reference to them, the mounds will be described in alphabetical order. As many as possible have been located on the map (fig. 108), but it must be kept in mind that the location is usually approximate, from written description or from a map on which it was difficult to correlate the rivers with those on the air map with any assurance of accuracy.

BACURÍ ALTO

Three to four kilometers north of the Fazenda Silva, in the region of Cabo Maguarí, is a site called Teso do Bacurí Alto. In September 1922, it was visited by Nimuendajú, who gives the following description:

> The refuse deposit had a thickness of about 20 cm. and covered a somewhat larger area than that of Teso das Igaçabas [which was 10 x 20 meters]. Though the owner of the Fazenda had already made excavations, great numbers of clay fragments were, nevertheless, brought to light. They were bigger and better preserved than those of the two other sites, and among the huge number of bad products were some fragments of really beautiful and artistic specimens. Several times I found fragments which, though widely scattered, could be put together . . . [Rydén, MS.]

Among the sherds were a large number of stool fragments with relief and polychrome decoration. Other objects found included charred *tucumá* nuts, sharp-edged splinters of a brittle, fiery-red stone, a small piece of nephrite, small lumps of ocher and yellow *taná*, and a badly corroded iron nail (Rydén, MS.). All specimens are in the Göteborg Museum. (The nail is of more recent origin.)

CAJUEIROS

Couto de Magalhães speaks of a "kind of circular fort of earth" on the Fazenda Cajueiros, and Ferreira Penna, in quoting him, adds that it "probably contains artifacts and human remains." A mound called Cajueiros and described as "bastante rico" is reported by the Barão de Marajó. The same site is mentioned by Pinto, and a bowl from there is illustrated by Torres.

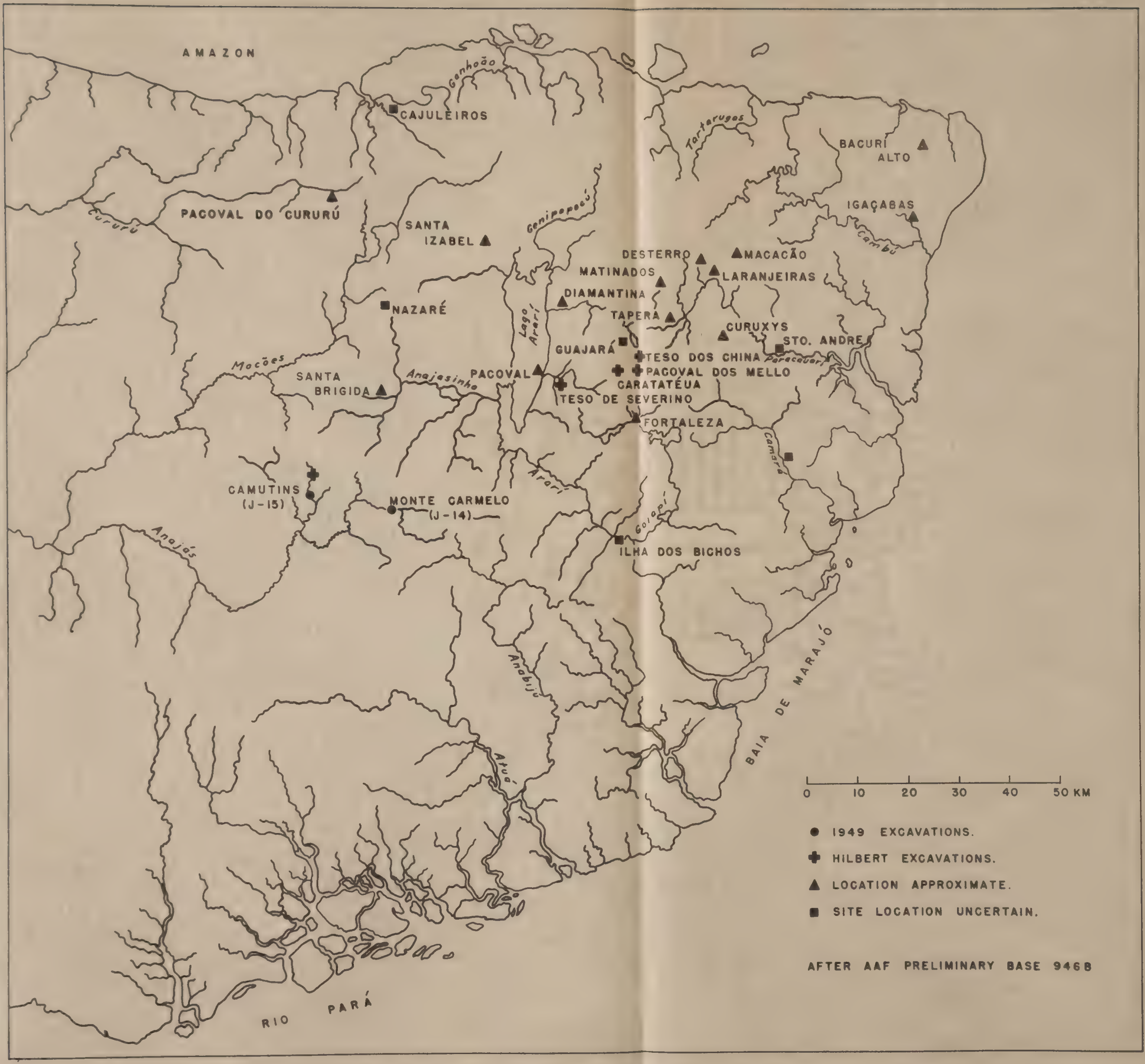
AMAZON
Genhoão
CAJULEIROS
Tartarugas
BACURI ALTO
PACOVAL DO CURURÚ
Cururú
SANTA IZABEL
Genipapoeú
IGAÇABAS
Cambú
DESTERRO
MACACÃO
MATINADOS
LARANJEIRAS
DIAMANTINA
NAZARÉ
Lago Arari
TAPERA
CURUXYS
GUAJARÁ
STO. ANDRE
TESO DOS CHINA
Paracauari
Mocões
PACOVAL
PACOVAL DOS MELLO
SANTA BRIGIDA
Anajasinho
CARATATÉUA
TESO DE SEVERINO
FORTALEZA
Camará
Arari
CAMUTINS (J-15)
MONTE CARMELO (J-14)
Goiapi
Anajás
ILHA DOS BICHOS
BAIA DE MARAJÓ
Anabijú
Atuá
0 10 20 30 40 50 KM
● 1949 EXCAVATIONS.
✚ HILBERT EXCAVATIONS.
▲ LOCATION APPROXIMATE.
■ SITE LOCATION UNCERTAIN.
AFTER AAF PRELIMINARY BASE 946B
RIO PARÁ

FIGURE 108.—Map of Marajó Island, showing the location of Marajoara Phase cemetery sites.

391329 O - 57 (Face p. 296)

Bibliography: Torres, 1940, pl. 49; Couto de Magalhães, 1876, pt. 2, p. 34; Ferreira Penna, 1879 a, p. 48; Marajó, 1895, p. 88; Palmatary, 1950, p. 276; Pinto, 1930, p. 351.

CAMUTINS

Although von Martius mentioned the existence of urns at Camutins in 1867, Ferreira Penna is said by Hartt (1885, p. 17) to have been the first to make a scientific examination and a collection, which was deposited in the Museu Nacional. He was followed in 1876 by Orville Derby, who left the first description: The main mound, about a league above the junction of the *igarapé* with the Rio Anajás, was 210 by 80 meters in base measurement and some 13 meters in height.[24] Derby made his visit during the dry season, and was able to observe a large excavation on the west side of the *igarapé* from which he deduced the earth for the construction of the mounds had been taken. Near it was a second mound, almost as large as the first. A third mound, a few hundred meters below the first, was lower but broader and was bounded by the *igarapé* on three sides (cf. our J–15, Mounds 1, 16, and 17). He was informed that there were a dozen mounds in a distance of half a league upstream from those he saw, all on the east side, and all but two in the narrow tree zone along the bank. He was also told that at times sherds were found in the *campo* and in the forest on the natural surface of the ground. On the question of intentional form or orientation, he concluded,

> These three mounds all extend in different directions, indicating that their position is without significance. They all have a more or less elliptical or oval form, but this seems to have been accidental, as there is no evidence that they were constructed according to any definite plan. [Derby, 1879, p. 226.]

The ceramics he found to be of the same general type as those at Pacoval, which he had just visited, with a few differences in emphasis:

> From what I could observe, it appears that the jars are more frequently painted than incised, the contrary of what occurs at Pacoval. The predominant shape is large, depressed and globular, while at Pacoval smaller sub-cylindrical and conical forms are more common. These observations, however, are too slight for the establishment of distinctions, and all the principal forms are represented in both places. Tanga fragments are abundant, although I did not find any complete ones. The majority are red and without ornamentation, but I saw fragments painted like those from Pacoval. [*In* Hartt, 1885, p. 25.]

The next visitor to leave a detailed report was W. C. Farabee (1916 b), who in 1916 made extensive excavations in one of the group, which he refers to as the "Magno Mound," and which is now called "Belém" (see J–15, Mound 17). He also tested our Mound 18 in several places to a depth of 6 feet, finding sherds to a depth of 3 to 4 feet but no whole vessels. He attributed the location of the mounds to springs along the left bank of the *igarapé* and to the conditions of proximity to the *campo* and accessibility to the breeze from the east, which would minimize the annoyance from insects. The owners of the cemetery visited by Derby (our Mound 1) refused Farabee permission to excavate, and from the magnified dimensions he gives for it (1,500 ft. long), it does not seem probable that he was able even to make a close examination.

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[24] It should be kept in mind in evaluating the discrepancies in the dimensions here and for the following sites, that some are estimates rather than measurements, and that they were made at different times of the year when the difference in water level changed the visible extent. In the earlier accounts, 75 years less erosion by rain and cattle may be partly responsible for the fact that the measurements are often larger than those given by later reporters.

Excavation was extensively undertaken on our Mound 17, as the diagram in his field notes shows (fig. 107). After testing the top and along the west side and finding only sherds, he tried the south end, where someone had once found a pot, "and at once found so many pots together it was impossible to dig without hitting one. In a space of six feet square there were six large pots and three small ones." This cut he called "plan 1." Plan 2 was excavated near the center of the top and plan 3 north of plan 1. An examination of Farabee's field notebook (1916 b), where the location of each vessel is given by number, leads to a feeling of frustration that the loss of the vessel identification should render a major part of the material useless. The few associations that can be recognized are extrapolated below. They indicate the same trend at Mound 17 as that observed in our work at Guajará and Camutins, Mound 1, namely, a transition from secondary burial with tangas in large jars to cremation without associated tangas.

Plan 1[25]

Depth	
1 foot	29, with black ashes, inside 28; 32, engraved, containing child's teeth, inside 31.
2 feet	Group of 6 jars, small to 3 feet tall, all with ashes.
3 feet.	
4 feet.	
5 feet	24, top broken, bones inside; 27, engraved, bones; 107, large, painted, tanga inside.
6 feet.	
7 feet	109, large, engraved.

Plan 2

Depth	
1 foot	12, small and round.
2 feet	8, large, 2 tangas and bones inside, lid inverted over mouth.
3 feet	11, large, bones inside.
4 feet	1, 3 ft. high, plain, 4 small bowls (?) inside; 30, large, containing bones.
5 feet	16, large, painted, containing bones and a tanga.

---

[25] Vessel numbers are those used by Farabee in his field catalog. Levels shown here without entries do not mean no vessels were found, but that the data is not sufficiently specific to be of use. A complete listing of the vessels from each plan is given by Palmatary, 1950, p. 276.

Plan 3

Depth	
1 foot.	
2 feet.	
3 feet	4, containing ashes.
4 feet	1, large, decorated.
5 feet.	
6 feet	2, painted, large, "beautiful plate" inverted over mouth as cover, bones inside.
7 feet.	
8 feet	61, large, engraved.

It is uncertain whether Farabee's description of Marajoara burial practices applies to both of the sites on which he dug, or to the Camutins alone. If his interpretation can be relied upon, he found primary urn burial:

> Many of the urns were broken from the weight of the superimposed earth, and when excavating it was convenient to remove these fragments before disturbing the earth in the interior. This method allowed us to cut down in cross sections and expose the outline of the bodies in profile. As the bones decomposed, silted earth took their places; so, by carefully cutting away the earth, we were able to trace out all the bones of the body. In many cases, in the early stages of decomposition, the head had fallen forward from the trunk and remained face up on the bottom of the urn. The body, no doubt, had been wrapped in cloth or bark and then deposited in the urn after it had been placed in a hole dug in the mound. The neck of the urn was sufficiently large to admit the body in this form. In one of the largest of the urns two adult bodies had been seated side by side. [Farabee, 1921, p. 148.]

Sandoval Lage is the first to record the extent of the mound complex on the Igarapé Camutins. He notes that their number exceeds 40, but errs in attributing to some a height of 20 to 40 meters. He says of the ceramics that they are generally comparable to those from Pacoval, the greatest difference being a higher frequency of painting at Camutins (Lage, 1944, pp. 219 and 225). Lage calls attention particularly to a number of mounds on a tributary of the upper Camutins, on the Fazenda São Marcos, which he believes to have escaped previous notice because of their small size (op. cit., p. 217).

In January, 1950, Hilbert visited Marajó as a member of a party from the Museu Paulista, and undertook an examination of the upper Camutins. He was able to discover and map 17 sites between the last mound we visited (Mound 15, Inajasal) and the headwaters of the stream. All have suffered greatly from erosion, expedited by the depredations of water buffalo introduced by the ranchers some 30 years ago, with the result that all but 5 are completely inundated during the rainy season. The following descriptions are abbreviated from Hilbert's notes (1952, pp. 10–15, and pers. corres.). The location is shown on his map (op. cit., pp. 11 and 13).

Md. 1. Ht. 2.5 meters; covered with bushes and small trees; no surface sherds.

Md. 2. Similar to Md. 1, except that height is about 1.5 meters.

Md. 3. "Pau d'Arco," height 4 meters, covered with trees and bushes. Sherds of domestic ware scattered over surface, especially at base on northwest.

Md. 4. Sherds on bank about 1 meter above water level; no artificial elevation visible.

Md. 5. "Ingá," height 1 meter at south end, 2.50 meters at north end; overgrown with Ingá trees and bushes. Surface sherds most frequent on west and northwest slope.

Md. 6. Opposite Md. 5, 2.5–3.0 meters high on river side, nearly circular, and covered with vegetation; sherds on surface of north slope.

Md. 7 and 8. Sherds on river bank (cf. Md. 4).

Md. 9. Two small mounds, height 1.50 and 1.00 meters; covered with bushes and trees.

Md. 10. Sherds on river bank (cf. Mds. 4, 7, 8).

Md. 11. Two low mounds on left bank, 1 meter in height, covered with bushes and small trees.

Md. 12. "Aratengá," two summits, south elevation 1.50 meters, north one 2.0–2.5 meters, separated by slight depression; many surface sherds, especially at north end.

Md. 13. Many sherds on surface of elevated left bank, 3.00–3.50 meters high and ca. 300 meters long (cf. Nos. 4, 7, 8, 10).

Md. 14. "Urubú," in forest some 50 meters from the river bank; no prominent elevation; many sherds on surface including typical ornate cemetery types.

Md. 15. "Cuieiras," 75 meters from the river on the right bank; maximum height 3 meters, with gentle slope to west; many sherds on east slope. Excavation produced 20 anthropomorphic burial urns with stylized faces, protruding eyes and smaller excised jars with *jacaré* modeling. One of the latter contained 64 cylindrical beads of a white stone flecked with black.

Md. 16. "Tucumeira," consists of three small, round accumulations 10–15 meters in diameter, separated from Md. 15 by a narrow low area. Artificial elevation barely perceptible, but surface on river side produced many sherds and figurine fragments.

Md. 17. "Furinho," ca. 150 meters long by 30 meters wide; maximum height 3 meters at south end, decreasing to 2.5 to 2.0 meters going north. Surface sherds abundant. Excavation produced sterile soil below 1.5–2.0 meters. Secondary urn burial typical; jars plain, painted, or excised. One earplug, 5 tangas, mostly red slipped.

Hilbert gives a general description of the burial pattern derived from excavations in Cuieiras and Furinho. Three main types of urns were encountered: (1) Painted, anthropomorphic jars, from 35 to 80 cm. in height (the most frequent type); (2) jars with globular, painted or plain body and cylindrical, excised neck, with a total height of 40 to 50 cm; and (3) excised, cylindrical jars, sometimes with a slightly expanded base. Tangas were rare in the jars, only one being found at Cuieiras and 5 at Furinho, and tanga sherds were completely absent in the surface accumulations at Cuieiras and Tucumeira (Hilbert, 1952, pp. 18–19, and pers. corres.). There was no evidence of cremation.

Hilbert makes several observations on the quality of the decorated types as compared to those at Pacoval:

> The style of decoration and the manner of its execution are the same at Cuieiras and Furinho. All the techniques that are typical of the Marajoara Phase occur. Beyond this, the following observations can be made:
>
> I—Predominance of plain and painted pottery.
>
> II—The paint adheres superficially, and comes off easily.
>
> III—The decoration, whether painted, incised, or champlevé, is executed more superficially and with less care than is usually the case. The tracing of the lines, as well as the disposition and distribution of complexes they form, is frequently arbitrary and inconsistent. The general impression is one of lack of the sure and uniform stylistic sense that is typical of the Marajoara Phase.
>
> IV—The modelled ornamentation shows, in part, this same characteristic. [Hilbert, 1952, p. 20.]

Hilbert's classification of the sherds on the basis of core characteristics, ignoring surface decoration, gave 65.3 percent Inajá Plain of 49 sherds from Cuieiras and 37 percent Inajá Plain of 27 sherds from Furinho (ibid.).

Bibliography: Derby, 1879, p. 226; Farabee, 1916 b (*also in* Palmatary, 1950, pp. 275–276); Farabee, 1921, pp. 145–146; Hartt, 1871, p. 260; Hartt, 1885, pp. 23–25; Hilbert, 1952 and Personal Corres.; Lage, 1944, pp. 215–219; Marajó, 1895, p. 88; Martius, 1867, p. 178; Palmatary, 1950, pp. 272, 275–277.

CARATATÉUA

About 8 km. southwest of Lago Guajará a patch of forest stands out from the treeless plain and marks the location of this site. Hilbert describes it as extending approximately 500 meters northeast-southwest, and narrowing from 150 meters near the southwestern end toward the northeast. There is no marked elevation, but it is probably sufficient to prevent flooding. A 1- by 1-meter test produced few sherds and sterile gray sandy clay at a depth of 30 cm. Of the 44 sherds, 40, or 90.9 percent, were on Inajá Plain; 4, or 9.1 percent, were on Camutins Plain. Decorated types included Anajás White Incised. There was one fragment of a stool, but no evidence of tangas.

The existence of other smaller sites of similar nature in the vicinity leads Hilbert to the conclusion that Caratatéua represents a complex of sites similar to Teso dos China (pers. commun.).

CUIEIRAS

"Mound das Cuieiras" is one of those listed by Barão de Marajó (1895, p. 87), with no location or description. This may be the same as Santa Brigida, which is on the Igarapé Cuieiras.

CURUXYS

Holdridge (1939, p. 43) mentions having excavated a burial mound on Fazenda Curuxys, which is located about half way between Lago Ararí and the east coast at Soure.

DESTERRO

A mound called "Ilha das Panellas" is located on the Fazenda Desterro, which in 1895 belonged to Francisco L. Chermont (Marajó, 1895, p. 88). Holdridge visited a *fazenda* by that name just northwest of Laranjeiras in 1938, and an indefinite reference to excavations may have been located there (1939, p. 175). Another *fazenda* of the same name is on the upper Rio Mocões.

DIAMANTINA

Farabee conducted excavations in what appears to be a group of habitation mounds east of Lago Ararí:

> Went to work with 5 men but found no mounds at all, nothing but house sites, a dozen or more on the banks of igarapé from Lake Arary. Here the banks were above high water and a good place to live, about 4 miles from the lake. . . . The 5th and 6th and 7th we dug these sites and found a few burial pots, all plain, unpainted, small; all had charred bones inside. Found only one fragment of a painted pot and one engraved; all (other) fragments were of that coarse undecorated ware. No fragments of animal bones, no fireplaces, only ashes mixed with earth in one site. . . . No place was two feet deep to original clay. Saved 4 pots and 2 fragmentary plates, 1 cup, 3 stone axes found together near surface alone, some other pieces of stone with grooves, one a good axe. [Farabee, 1916 b, pp. 2–5.]

FORTALEZA

This cemetery on the upper Rio Goiapí, southeast of Lago Ararí, was first reported by Barnard in 1871 as being "a mound 8–12 ft. high, forming an island during the annual overflow and full of vases" (Hartt, 1871, p. 260). Thanks to Farabee, it and the associated habitation mounds are the most thoroughly excavated of all Marajoara sites (fig. 109). Although the ceramic identifications have been lost, as happened in the case of his Camutins specimens, the Fortaleza field notes (1914) are somewhat fuller and accompanied by numerous maps and diagrams. The 14 mounds are described as follows with the dimensions representing the extent at the end of the dry season:

No. 1. Did not examine.
2. 10′ high, 150′ in diameter, steep on the stream side, sloping gently in other directions.
3. 3′ high, oblong, 20′ by 30′.
4. 5′ high, 30′ in diameter, steep on the stream side.
5. 7′ high, 60′ in diameter.
6. 4′ high, 15′ wide, 40′ long, in open field by side of stream.
7. 10′–12′ high, 200 yards long, 75 yards wide, in forest by side of river. River 75 yards wide. Broad, flat top, great many sherds mostly same coarse kind as 1 and 3.
8. 6′ high, irregular in shape, 250′ by 300′, just across stream from 7, same class of sherds.
9. At fork in the river, 6′ high, 20′ in diameter.
10. Left of stream, 12′ high, 70′ diameter, perfect cone.
11. On island in the middle of the river, 12′ high, 300′ long, 30′ wide.

12. On island 30′ west of 11.
13. On Sta. Cruz, ¼ mi. below island.
14. On Sta. Cruz, ¼ mi. below 13.

Farabee made extensive excavations in 4 of the habitations and, although he felt poorly rewarded for his time and efforts, the results go far to demonstrate conclusions that would otherwise remain tentative. In addition, he investigated Mound 7, which appears to be a

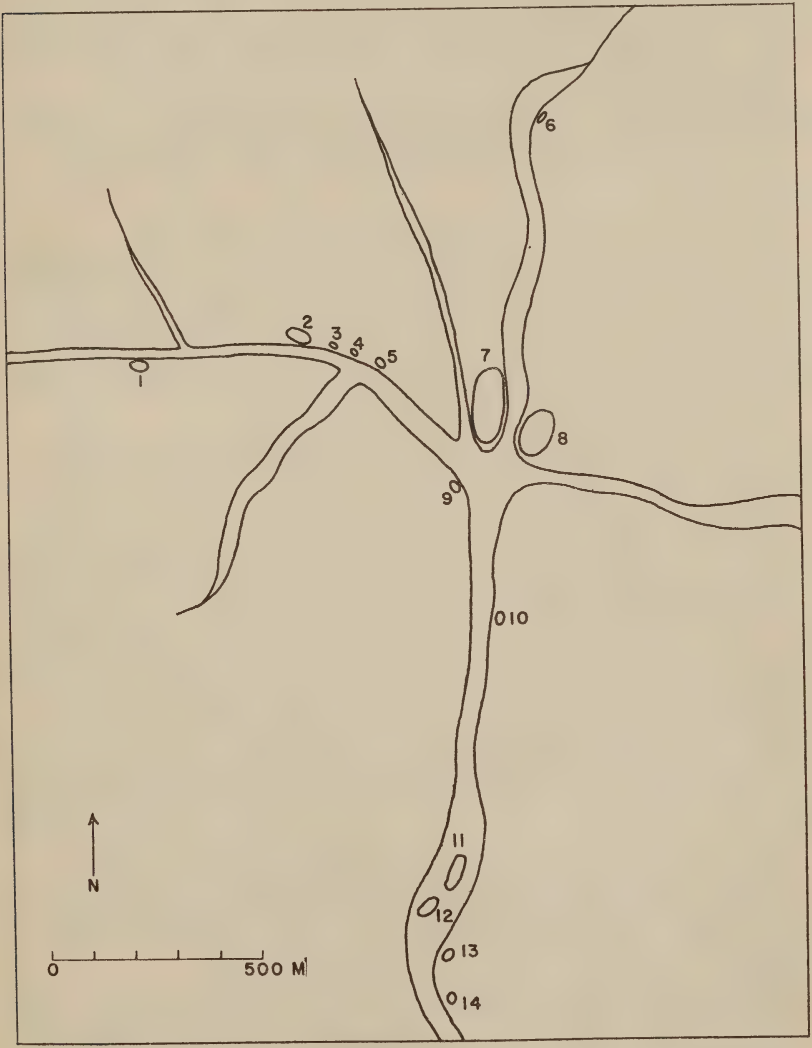

Figure 109.—Plan of the Fortaleza Mound Group of the Marajoara Phase on the Rio Goiapí. (After Farabee, 1914.)

cemetery. Since his large-scale digging led to the same interpretation as our limited tests, the account of his discoveries has the double interest of detailed description of the composition of the mounds and of demonstration of the reliability of the data derived from small tests by archeologists trained to recognize pertinent features. All quotations are from Farabee's 1914 field notes.

Mounds 2 and 3. "Nov. 25, Wed.—Sent four men to work on Mound No. 2, there being nothing whatever in No. 3 on the sides. After cutting all to 28 ft, I felt justified in continuing with 20′ through the center in hope of finding something at the bottom near the middle. At noon found pot 2 in the very center on top, 6″ below surface.

"Nov. 26, Thurs.—Character of Md. 2 same at 30′ except the narrow layer of ash has disappeared. The bottom ash is same, nothing in the ash. In the hard earth below 2½′ often is found small patches of ash with no evidence of fire. . . .

"Nov. 27, Friday—Work continued on Mound No. 2 and 3. Nothing but sherds found. . . .

"Nov. 30, Mon.—Continued work on Md. No. 2 with eight men.

"Trench No. 1, 15′ wide and 10′ deep and 40′ long, started from river at original surface of campo. Some ashes on original surface. Ashes and earth were stratified until the high water level was reached. . . . No thick stratum of ashes but here find numerous fire-places on burnt earth with fine charcoal in ashes and small or thin patches of ashes. In one of the largest fireplaces were many fragments of the coarse red ware with many bottoms of pots, possibly burning place. Fragments of deer jaw-bone and snake backbone . . .

"Trench 2, 15′ wide, 9′ deep. Same level as other, some ashes on bottom but no fireplaces. Few fragments of pottery; near middle length, burnt earth as of fire-place. After continuing for 45′ to centre of mound and finding nothing new, I discontinued . . .

"Trench 3. Cut three trenches 3′ wide and 30′ long down to original [surface], 1½′ apart. Nothing but very few fragments, no ashes, no fireplaces. Solid earth same as campo. [Trenches dug on] north side.

"Trench 4. Cut 3 trenches 4′ wide and 1½′ apart, 30′ long, on south side [i. e., end]. Found immense quantities of fragments and burnt earth—sweepings from pottery factory. Very little ashes. Dump heap is reddish on account of burnt earth. Found pottery lamp[26] and fragment of pottery mold[26] for outside of pots."

Mound 3. "Cut trench along side and cross middle, 3′ wide and 20′ long. Very few fragments and nothing more.

Mound 4. "Dec. 1, Tues.—Put two men on Md. 4. Cut trench 10′ wide, 5′ deep, past middle. [At] 15′, found some sherds and little ashes in patches. Stone axe near surface.

Mound 5. "Nov. 20, 1914—Went to work on mound No. 5 of plan as it seemed the most likely, being a round mound and centrally placed. Had but one man and my boy, but we made a good start and [I] was encouraged by finding one good specimen. The mound was very hard as it was near [the end of] the dry season. . . .

"Nov. 21, Sat.—Continued with only one man, found nothing but sherds. Some white ash found but no charcoal, *no* fragments of *bone* or stone. While sherds are common they are not numerous and all of the thick red ware. . . .

---

[26] These identifications are erroneous.

"Nov. 23, Mon.—Worked with 2 men. At 10′ on bottom found white ash [27] 8″ thick just above 3″ or 4″ river deposit and then 2″ to 3″ ashes and earth to top carried and placed above. The bottom is the general level of the *campo* and from 12″ to 15″ below high water. . . . The same stratification continues at 20′; nothing found in the ashes.

"Nov. 24, Tues.—Same stratification at 25′. Nothing found except fragments. The first 2½ ft. of top has fragments. Next 3′ nothing, next 1½′ few fragments. . . .

"Nov. 28, Sat.—Abandoned work on Md. No. 5 at 9:00 A. M. having excavated well past the middle of the mound down to original soil and found practically nothing."

Mound 7.—Excavation began with 2 trenches at the south end, in which he "dug all day and got not even sherds." Two more on the west side, toward the north end, were slightly more encouraging: trench 3 produced sherds and fragments of tangas, and trench 4, two vessels containing ashes and bone fragments at a depth of 1 foot. Although a prohibition against felling any of the trees growing on the site meant that excavation had to be undertaken patchily, a glance at the diagram (fig. 110) will show that the testing was quite thorough. Among objects of an unusual nature from this mound were:

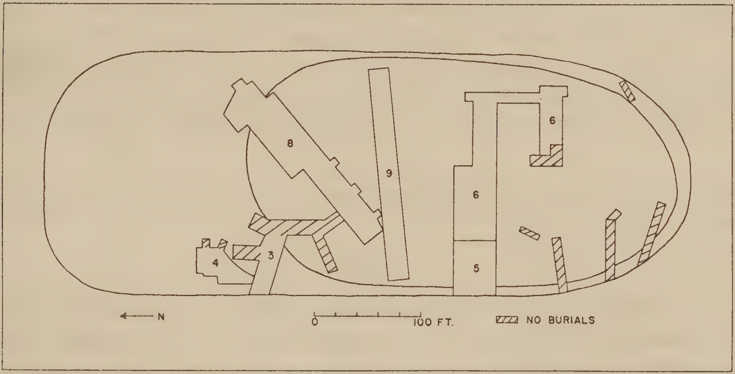

FIGURE 110.—Detailed plan of Mound 7 of the Fortaleza Group showing the extent of Farabee's excavations in this Marajoara Phase cemetery site (after Farabee 1914).

Trench 4: 2 stone axes.
Trench 5: Fragment of a spindle whorl.
Trench 6: Small quartz ax 2 feet deep; 6 stools scattered, 15 inches or less in depth.
Trench 8: Group of 9 clay stools piled together south of a large pot, half of which projected above ground. Of the stools, 3 had ashes inside, 2 were set over clay; all were right side up. (Farabee, 1914.)

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[27] The use of the term "ash" here and probably elsewhere in Farabee's notes is misleading. Our excavation showed that the core of the mounds is composed of a flaky, speckled white clay that he has erroneously identified as ash.

In a letter to the University Museum, Farabee summarizes the condition of the burials:

> . . . the burials were grouped. In a space of 50 feet square, we might find 50 pots, and then another 50 without finding a thing. Once in a space 4′ by 2′ we found 7 pots belonging to 4 different burials.
>
> Apparently, they practiced two methods of burial: in one, the bones after they had been disarticulated and, in some cases broken, were put in pots and buried. The other method was to burn the body and bury the ashes in a pot. . . . Very little was found inside these burial pots or with them. In some cases a tanga was inside the pot but more often it was placed near the pot on the outside, along with plates and dishes. [Letter of Feb. 8, 1915.]

In the hope of providing a basis for seriating this site with those we excavated, we classified the collection of 746 sherds at the University Museum, Philadelphia, listed as from Fortaleza according to our ceramic types. The entire range of decorative techniques is represented (Appendix, table 43). Of the decorated sherds, 376 have the gray core of Inajá Plain and 108 the orange core of Camutins Plain. Added to the plain sherds, this gives a total of 552 or 74 percent Inajá Plain and 194 or 26 percent Camutins Plain (Appendix, table 41).

Bibliography: Farabee, 1914, 1915, and 1921, pp. 144–145; Hartt, 1871, p. 260; Palmatary, 1950, pp. 274–275.

GUAJARÁ

A mound covering 4 or 5 acres is reported by Hartt (1871, p. 260) to be located on the *campo* near Lago Guajará, east of Lago Ararí. This mound is not to be confused with another of the same name in the Monte Carmelo group.

ILHA DOS BICHOS

This cemetery was visited by J. B. Steere in the rainy season of 1871, and the major part of his collection was deposited in the Museum of Anthropology, University of Michigan. Located in the *campo* near the Rio Ararí, upstream from the modern settlement of Arariuna, it was about half an acre in area and 15 to 25 feet high. The surface was covered with trees, and the rains had washed deep ravines in the sides. Sherds were abundant on the surface and a test showed the refuse deposit to be of "considerable depth." Burial urns protruded at various levels from the eroded sides. Although these were broken, Steere describes them as "upright, with straight sides and with large covers like broad-brimmed hats. Both the urns and the covers showed remains of painting in various bands and figures" (Steere, 1927, p. 22). All traces of bones had disappeared, but several of the urns contained beautifully polished and ornamented tangas. As a result of his digging, Steere concluded that:

> The mound appeared to have been built to a certain height, inhabited, and the dead buried beneath. Then, after a time, another layer of earth and another period of occupation was added. Two of these levels showed paving of burned clay, which was covered with ashes, charcoal and broken pottery. [Op. cit., pp. 22–23.]

A small collection deposited by Steere at the Museum of Anthropology, University of Michigan, is presumably from this mound. It contains 31 vessels and sherds, all but three with decoration. This includes all of the Marajoara Phase types except Goiapí Scraped, Anajás Plain Incised, and Carmelo Red. A classification on the basis of the plain ware on which the decoration was applied gives (omitting 7 complete vessels) 15 or 62.5 percent Inajá Plain and 9 or 37.5 percent Camutins Plain.

Bibliography: Meggers, 1947; Palmatary, 1950, p. 271; Steere, 1927, pp. 22, 23.

ILHA DOS MARCOS

For this mound, we have nothing but a reference to its existence on a *fazenda* belonging to Cruz Macedo & Cia. (Marajó, 1895, p. 87).

LARANJEIRAS

Tocantins names this, along with Camutins and Pacoval, as typical of the mounds found on the *campos* of Marajó, covered with luxuriant vegetation and containing ceramic deposits, especially burial urns. It also appears in the Barão de Marajó's listing, in which he describes it as "bastante rico." More recently, Laranjeiras was visited by Holdridge, who reports it to be about 15 feet high and to cover an area of over 2 acres. At the time he was there, the main *fazenda* house was situated on the summit and his description of the ravages wrought by many forces is typical of what has happened to many of the other Marajoara mounds:

> Everywhere the ground was littered with the bits of strange funeral pottery—the roots of the great trees had reached down among the dead, expanded in their vigorous life, and crushed the urns that held the bones of the men and women who built the very mound on which the trees grew. Cattle had stamped over the graveyard in the wet season, their dull feet destroying the art and dreams of whole generations. Ranch children had excavated, looking for dolls, and smashed what did not please them. Cowboys . . . had dug for gold and, in disappointment, destroyed all they could. Several archeologists had been allowed a fly-by-night kind of permission to excavate which had served only to whet their appetites before they were asked to leave. [Holdridge, 1939, pp. 69–70.]

Digging produced a "lovely big burial jar" with anthropomorphic features, associated with "plates and dishes, fragments of dolls and whistles, broken bits of *tangas*" (op. cit., p. 71). On Holdridge's map, Larangeiras is shown about half way between Lago Ararí and Cabo Maguarí, the eastern tip of Marajó.

Bibliography: Holdridge, 1939, pp. 68–71; Marajó, 1895, p. 88; Tocantins, 1876, p. 55.

MACACÃO

The Museum of the American Indian, Heye Foundation, has a number of specimens from this mound, which is shown on Palmatary's map as northeast of Lago Guajará (1950, p. 283).

MATINADOS

Holdridge is tantalizingly indefinite about this site or sites on a *fazenda* shown on his map (1939) as just northeast of Lago Guajará. His use of the plural may refer to several sites here, or simply to his experience in digging mounds in general. It may be of Matinados or of Laranjeiras he is speaking when he says, "we found one burial urn four feet high with sculptured figures on its side, human faces portrayed and painted designs," with which were associated small vessels and tangas (Holdridge, 1933 b, p. 204). He thought he could distinguish three horizons of ceramics in the mounds: at the bottom, "a layer of simple red ware without designs, incisions, or bas-relief"; in the middle, "a layer occupied by exceedingly beautiful pieces painted with fantastic designs and incisions of an infinite variety," and on top, the simple red ware again (ibid.). Careful excavation in other mounds, however, does not produce any evidence to substantiate this impression.

MENINO DEUS

Farabee mentions a "low mound from which round pot came" at Menino de Dios (1916 b, entry for Jan. 8). Mordini lists "Menino Deus" as one of the sites in the area enclosed by the Ganhoão and Cururú Rivers and the Lagos Mututi and Asapão (1934 a, p. 62).

MONTE CARMELO

Steere (1927, p. 23) recounts that in 1879 he "camped for several days on a large mound of several acres on the little river Anajas," which probably was one of the Monte Carmelo group. The first to conduct any excavation appears to be Desmond Holdridge. He describes the site as "near the source of the Rio Anajás" (1939, p. 72), and although he attaches the name "Monte Carmelo" to it, his description applies best to the mound now called "Guajará" (J–14, Mound 1). Either through error or exaggeration, he gives the height as "about 70 feet," or almost 7 times what it was in 1949, only 18 years later. Among the products of his excavation was a large anthropomorphic burial urn (now in the Brooklyn Museum) with modeled faces on the neck and stylized, painted delineation of the arms and hands on the body (op. cit., photograph opposite p. 87). In general style it is very similar to jar L from our Guajará cut (pl. 76). It contained miscellaneous sherds, fragments of tangas and a secondary burial (op. cit., pp. 72–73).

NAZARETH

Our only knowledge of this site comes from the listing by the Barão de Marajó of a mound on the Fazenda Nazareth, belonging to Sr. Francisco L. Chermont. There is a *fazenda* by this name in the headwaters of the Rio Mocões (Marajó, 1895, p. 88).

PACOVAL

Ilha de Pacoval, on the east shore of Lago Ararí, just above the mouth of the Igarapé das Almas, is the most frequently visited mound on the Island of Marajó, both because of its accessibility and because of the apparently inexhaustible richness of the ceramic remains. Even today, after 80 years of uninhibited exploitation, one can still pick up "hundreds of little items: small figurines, adornos, fancy rims, extremely good-looking incised and champlevé sherds or even painted ones" (Hilbert, pers. commun.).

The earliest recorded visit, although not the first to be published, was made by Couto de Magalhães who traversed Marajó in 1865. Even at that early date he reported that

> many artificial mounds are known . . . of which one of the most notable on the island of Marajó is an artificial island in Lago Ararí. [1873, p. 410.]

He deduced that they were built to raise the houses above the annual flood waters:

> Considering that the region in which they are found is inundated for many tens of leagues . . . it is evident that the people, from the time they arrived in the area, began to build the mounds, without which it would be impossible to explain their method of existence during the rainy season in places that become true Mediterranean oceans. [Couto de Magalhães, 1873, pp. 410–411].

Six years later, in 1871, Hartt sent his assistant, W. S. Barnard, to examine the site and his is the first detailed description:

> The Ilha das Pacovas lies close to the western [26] side of the lake, opposite the beginning of the Rio Arary, which forms the outlet to the lagoa, and just to the south of the mouth of the Igarapé das Armas. It is oblong in shape, about ninety paces in length from north to south, and about forty paces in width. In the month of November, when the water was low, it was somewhat over ten feet in height above the level of the lake. It is for the most part covered with large forest trees. Situated at the northern end of the island, and separated from it by a narrow channel, is a little crescent-shaped islet apparently built on as an addition, and not so high as the main island. Both were evidently raised artificially, and are full of burial vases and pottery of all kinds. The vases, which are about three feet in height, are, in some places, buried as many as three or four above one another, but they are more or less scattered. The waves have worn away the edges

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[26] The directions are confused in several places in this account.

> of the island making a sloping shore full of broken burial jars and thickly strewn over with fragments of pottery. [Hartt, 1871, pp. 260–261.]

In the following year Pacoval was visited by Steere, Derby (whose collection is mostly at the Peabody Museum, Cambridge) and Ferreira Penna (who collected for the Museums in Belém and Rio de Janeiro). Ferreira Penna's description agrees with that of Barnard, and he remarks that the eroded northwest shore of the mound was so thickly covered with pottery fragments that there was hardly a spot where one could put his foot without stepping on a decorated sherd or part of a figurine. Steere had informed him that he noticed a marked change in the ceramics in the deposit, with the best examples in the lowest level and the quality deteriorating toward the top. This observation interested Ferreira Penna and he made an effort to check it:

> As soon as I arrived at Pacoval, I began to have the thick vegetation which covered the mound cut away, and there began shortly to appear several circles which were nothing less than the mouths of urns buried there and without lids. They were all of coarse, dark clay, and without any decoration except for some almost vanished traces of white paint in angular designs. They were broken and filled with dirt, with their own sherds and with fragments of a few small vessels originally placed inside them. In one of the jars was found a small pipe,[27] which although very crude is of interest because it is the only one that has been found in the Pará mounds.
>
> One side of the mound was subject to erosion during the winter by the action of the lake waters, and the excavations executed there produced two urns, one painted red and yellow on a grayish background and the other with relief and painting in blue and red.
>
> While this excavation was in progress, I saw a large urn, beautifully painted and with modelling on its upper and lower parts, sheltered by the huge roots of a robust *caja* tree, which fell after being undermined. A few of the tree roots had penetrated into the mouth of the jar and cracked it, so that the fall broke it completely apart.
>
> The work undertaken in the lower part of the mound was time-consuming and laborious; the earth was as if petrified by the presence of minute fragments of pottery which were imbedded in the clay like a coarse mosaic. The outcome of these efforts, if unsatisfactory in not producing a single complete specimen, gave me numerous fragments that were notable for their ornamentation and for their choice of material. I believe that it is only in this section that have been discovered those strange, triangular objects known as *Tangas*. . . .
>
> On the basis of the admittedly incomplete examination I made of this mound, I was able to recognize that there existed at least three levels or orders of vessels, the lowest level containing the most perfect ones and the upper the crudest, corresponding with what Steere had previously observed. [Ferreira Penna, 1879 a, pp. 52–53].

Derby paid another visit to Pacoval in 1876, and his observations, as recorded by Hartt, enlarge the picture of the burial pattern:

> The best-made objects are the burial urns, which were interred with particular care. The earth around them is frequently fine sand mixed with sherds, ashes and

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[27] This is probably a pottery spoon (pl. 81).

> carbon, indicating that after the urn was set in place the hole was filled with a special kind of dirt. Fine sand and sherds are also occasionally found inside the urns, mixed with the bones. Sometimes an elaborately decorated jar was put inside a larger plain one. They appear always to have been covered with a lid, but this has generally been broken and the fragments fallen into the jar. The bones found inside the jars are very poorly preserved, disintegrating into powder when exposed to the air, and in some cases completely vanished. In several instances I was able to tell from the bones that the complete skeleton had been buried, although the mouths of the jars I saw were not wide enough to admit a human body intact, nor was the jar large enough to hold it. It seems likely, therefore, that only the skeleton was buried after the decomposition of the flesh. It is certain also that some of the belongings of the deceased were placed with the body. In two cases I found tangas inside the jars, and at least one of these could not have been intruded accidently. The urn had been set inside a larger one and the tanga was in the space between the two. In one or two other burials I found small vessels inside the urns that seemed to have been used to hold paint or snuff. Stone objects are exceedingly rare. I did not find a single one, but I have seen a few that were said to have been found at Pacoval. [Hartt, 1885, pp. 22–23.]

Netto, who came about the same time, adds a few more details:

> The burial mound called "Ilha do Pacoval" is an artificial hill. . . . This hill is located on the east shore of Lago Ararí, on the interior of Marajó Island, and having been constructed more in the lake bed than on the shore, is now an island and now a peninsula, depending on whether the water level is high or low. [1885, p. 266.]

He also comments on the difference in the ceramics and suggests three possible interpretations:

> My own excavations, as well as those made by Derby and Ferreira Penna, have shown that along with the jars of the finest workmanship or the most delicate painting are found exceedingly coarse vessels which have no characteristics that would authorize their classification as representing the same period or would indicate the same source of manufacture as the former. . . . I do not wish to say whether this crude pottery is evidence of the progressive degradation undergone by the people who made the lovely jars referred to above, or whether it is the product of a less civilized group that by chance settled on the same spot deserted by the inspired and skillful makers of the most beautiful ceramics of South America. A third possibility is also plausible, and that is that the different qualities of urns were correlated with different classes of individuals: the importance or obscurity of the deceased determining the richness or plainness of the urn in which he was buried. [Op. cit., p. 265.]

Another early visitor was Tocantins, who commented on the prominence of the mound in the rainy season:

> At the time of my visit it rose 1.14 M above the level of the lake, while the adjacent campo was 2.28 M below the same level. This was the only point within a radius of several leagues that stood out from the flood waters beneath which the entire central basin of Marajó was submerged. . . . The site . . . is even today distinguished from the surrounding terrain by its thick, black layer of soil which is at the present time shaded by luxuriant vegetation. [Tocantins, 1876, p. 55.]

Other reports about this time give the elevation as from 3 to 8 meters,

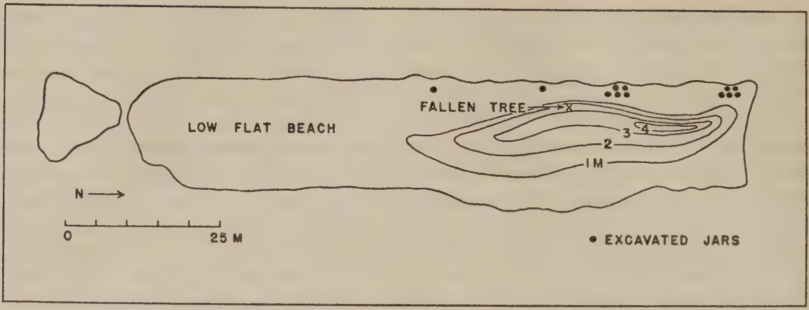

FIGURE 111.—Plan of the Marajoara Phase site of Pacoval made by Lange in 1913.

depending partly on whether the water level was high or low (Ferreira Penna, 1879 a, p. 51; Hartt, 1885, p. 20).

At the end of the 1913 dry season, Pacoval was visited by Algot Lange. A diagram he made of the site is reproduced in figure 111. He reported that:

> The general form of the island is that of a narrow parallelogram with rounded corners. . . . The northern section is higher than the southern, reaching, at a certain point, a height of four yards above the present water level. At the extreme of the wet season, when the greater part of Pacoval is submerged, . . . this highest point forms a narrow ridge just beyond reach of the choppy waves of the lake. This ridge slopes off to either end. . . . [Lange, 1914, p. 308 and photo opposite p. 318.]
>
> The soil throughout is a black, rich clay resembling the kind that is found at the bottom of the holes or ponds in the prairies. In places there is an outcropping of sand. Throughout the island the earth is mixed with pottery fragments from the size of minute particles to pieces weighing as much as twenty-five pounds. [Op. cit., pp. 310–311, photo opposite p. 309.]

Lange began by raking the surface of the entire site, "allowing no piece showing the slightest value to escape our farina baskets" (op, cit., p. 314). This procedure took several days, and during work along the western shore the mouths of a number of large urns were discovered

> sunk into the ground, forming a straight line following the littoral. I counted twelve in all. The first of these was broken upon reaching a depth of two feet. It crumbled into minute fragments when fully exposed. The mouth of the second jar was plainly visible amidst many broken pieces on the surface of the beach. This we attacked judiciously . . . [and] the result of this cautious work of many hours is a pyriform funeral urn of almost three feet in height. Upon placing this on the beach I remove a quantity of earth and greyish ashes from the interior, with the result that I find some human bones, all broken in pieces, and underneath these a most peculiar object of rare beauty and skill of workmanship. It is a perfect specimen of the original primitive "figleaf" for women. . . .
>
> Working our way around the old fallen *mucajá* palm we make some very rich finds. Whole vases covered with what appears to be symbolic figures of a com-

> plicated pattern, bordered by stripes of red and brown painted bands, surprise us and cause my sincerest admiration for the permanency of the colours which appear now as fresh as if painted but yesterday. I find also small platters with labyrinthic designs painted and incised. . . . Large and small idol heads, many of which are broken, lie around, some partly covered by earth and dirt. Close to the palm trunk I institute a series of excavations, and during many days we find here some rare objects of pre-historic art, such as a large richly painted and incised idol.[28] . . . [Op. cit., pp. 314, 316–317.]

In the 38 years that have elapsed since Lange's visit, the mound has continued to decrease in elevation. The most recent description of its condition is by Hilbert (1952, pp. 21–30, and pers. corres.), who visited the site in 1951. At that time there was a single tree on the northeast end and a native house on the highest point toward the southwest part, where the elevation reached 1.60 meters during the dry season (fig. 112). As the water level in the lake rises with the rains, the mound shrinks until it is completely inundated. Now that vegetation is no longer able to maintain a foothold on the mound and the soil is not bound by the interlaced roots, the site is being washed away at an accelerating pace. Its long use as a modern house location, its frequent submission to excavation and its annual subjection to the erosion by the waves of Lago Arari have resulted in thor-

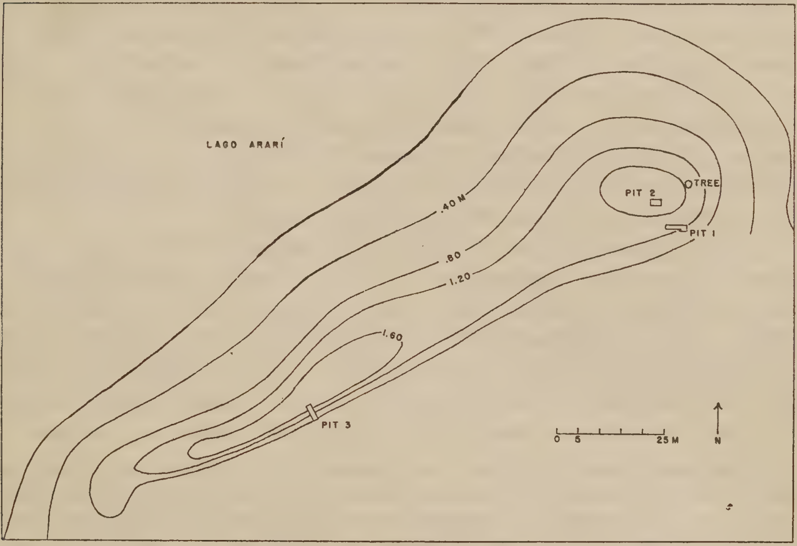

FIGURE 112.—Plan of the Marajoara Phase site of Pacoval made by Hilbert in 1951.

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[28] This white incised, red retouched (Pacoval Incised), anthropomorphic jar is in the American Museum of Natural History

ough disturbance of the cultural remains, with the intrusion of modern materials (china, tile, and beer-bottle fragments) to a depth of 90 cm.

Hilbert made three stratigraphic excavations. Pit 1, 1.50 by 1.50 meters, was on the slope away from the lake, 10 meters south of the tree. The upper 4 cm. were occupied by humus and roots. Between 4 to 14 cm. the largest sherds (averaging 10 cm. in diameter) were found. As the depth increased the sherds became smaller and increasingly eroded, often reduced to particles like coarse sand. At 50 cm. this gave way to sterile gray clay. An expansion of the cut for 4 meters toward the west revealed the same conditions. Pit 2, at the summit of the northeast end, was 2.50 by 1.50 meters. The situation was the same here as in pit 1, except that the condition of the sherds was somewhat worse. Intrusive materials included modern tile and pottery at 35 cm., china at 55 cm. and bits of a green glass beer bottle at 90 cm. Pit 3 was a trench 1 m. wide begun at the bottom toward the southwest end of the east slope and extended into the mound for 4 meters. No new features were discovered. During tests along the lake side, the refuse was found to extend to a depth of 10 to 35 cm., the higher figure pertaining to the northeast end and the lower one to the southwest. The surface collection of 307 sherds was classified by Hilbert on the basis of core color, giving 86 percent gray cored, or Inajá Plain, and 14 percent orange cored, or Camutins Plain (Hilbert, 1952, pp. 28–29 and pers. corres.).

Specific information on the method of disposal of the dead practiced at Pacoval is limited, but secondary burial is the most often-mentioned type. Hartt (1885, p. 22) concluded from the arrangement of the bones in one jar that the skeleton had been placed inside with the articulations at least partly intact. The fact that some of the jars were too small to hold a complete skeleton, even if disarticulated, led him to explore the possibility that cremation was also practiced:

> All the bones found in the urns were fragmentary. The probabilities are that the bodies were burned, and that only the ashes and charred bones were placed in the urns. An analysis of a small amount of black ash-like earth, found adhering to one of the jars, was made for me by one of my students, and found to contain a very large percentage of phosphate of lime. [Hartt, 1871, p. 263.]

Netto also reports the discovery of "two or three partly calcined skulls," but concludes that cremation was unusual (1885, p. 427).

The question of stratigraphy at Pacoval has been of interest from its earliest examination in 1871, when Steere and Ferreira Penna agreed that at least 3 strata could be discriminated by the quality of the ceramics they contained. A somewhat different conclusion was reached by Mordini, as a result of his excavations in 1926. He isolated two ceramic-bearing deposits separated by a sterile layer 48 cm. thick. The wares of the two strata were not distinguishable in style or ornamentation, but the examination by micro-emulsion showed the presence of *cariapé* tempering in those of the upper level, and it was absent in the lower level. Mordini concludes:

> From this it is possible to maintain that the Marajoans arrived at the island ignorant of the custom of adding siliceous material of biological origin to the clay used in making their pottery. Later, they acquired this cultural element either by local invention or by trade with some other Amazonian tribe. [Mordini, 1934 b, p. 15; cf. Mordini 1947, p. 640, and Linné, 1931, p. 281.]

As explained above, Hilbert found the site completely disturbed at the time of his visit in 1951, making stratigraphic analysis impossible.

In the hope of being able to seriate this site with others and thus determine the relative antiquity of some of the Marajoara cemeteries, we classified the Pacoval collection of the Peabody Museum, Cambridge, into the ceramic types established for the Marajoara Phase. The full range of decorated types was present, but only 29 plain sherds were included in the collection. In order to get a more reliable picture of the ratio of Inajá Plain to Camutins Plain, the decorated sherds were classified into these two types on the basis of their paste color. This increased the count to 234 Inajá Plain and 79 Camutins Plain and gave a ratio of 75 percent Inajá Plain to 25 percent Camutins Plain. In computing the relative frequency of the decorated types, 1,039 sherds from the American Museum of Natural History collection from Pacoval were also included, giving a total sample of 1,353 decorated sherds (Appendix, table 41 and 43).

Bibliography: Derby, 1879, pp. 225–226; Derby, in Hartt, 1885, pp. 21–23; Ferreira Penna, 1879 a, pp. 51–53; Hartt, 1871; Hilbert, 1952, and personal correspondence; Lange, 1914, pp. 307–322; Marajó, 1895, p. 87; Meggers, 1948, pp. 153–154; Mordini, 1934 a, pp. 62–63; Mordini, 1934 b, pp. 15ff.; Mordini, 1947, p. 640; Netto, 1885, pp. 265–268; Netto, 1890, p. 202; Sampaio, 1922, p. 849; Tocantins, 1876, p. 55.

PACOVAL DO CURURÚ

The earliest and most detailed account of this cemetery mound is by Nimuendajú, who visited it at the end of 1923:

> I then went a short distance in south-western direction from the bank of the Cajueiro [to] the upper Rio Cururú. . . . At its left bank the Fazenda Pacoval is situated, and 600 M further up a very interesting mound is located on a point of land between the Rio Cururú and its small tributary on the left. A canal now cuts across behind the mound so that it forms an island. The whole country, almost as far as the eye can see, is a tree-less plain, which is submerged nearly six months of the year by the high water. . . . Its length is 220 M and its overall width 50 M. It lies in a north-south direction. The northern and central parts are the widest, the southern one forming a long, narrow point. The greatest height (5 M) is near the northern end. Then the crest slopes down to about 1.50 M, rises again to more than 2 M and ends in the southern point mentioned. The alluvial soil is yellow clay, which is so intermixed with tiny fragments of pottery that, at a cursory glance, it gives the impression of being gravel. Fragments

> exceeding the size of a hand are rare, at any rate on the surface. The north and east sides are covered with sherds, as is the narrow strip of land between the mound and the river, whereas they are absent on the corresponding surface to the west. . . . It is overgrown with tall trees so that it is visible from a great distance in the flat, tree-less surroundings. As I was forbidden to make excavations . . . I had to confine myself to collecting a few fragments from the surface with the characteristic incisions in Marajó style. No traces of painting remain; they may, however, have been effaced by the weather. From the land-steward of the Fazenda I got a zoomorphous, spherical vessel without neck, with narrow rim and two pairs of cord-holes at the side [see Nordenskiold, 1930, pl. 14–e]. It is decorated in the characteristic manner and the cross-motif recurs no less than ten times. Further, I got a thick bead (?) of pottery. [Nimuendajú, in Rydén, MS.]

The Göteborg Museum collection includes this excised vessel and a fragment of a stone ax of fine-grained, dark-green diorite (?).

Pacoval do Cururú was visited in 1930 by Sra. Heloisa Alberto Torres. Lothrop, in reporting her work, describes the site as being under water except at low tide (1934, p. 820). This is contradicted by Moraes' statement that it is larger than Pacoval do Ararí, reaching a height of 10 meters (1936, p. 34). Three small potrests are illustrated by Torres (1940, pl. 47).

Bibliography: Lothrop, 1934, p. 820; Moraes, 1936, p. 34; Nordenskiöld, 1930, pl. 14–e; Rydén, MS.; Torres, 1940, pl. 47.

PACOVAL DOS MELLO

Hilbert reports the remains of a site in the *campo* 4 km. east of Caratatéua and almost due south of Lago Guajará. The original contours of the mound were altered to provide a foundation for the headquarters of a *fazenda* now occupying the area, and the present maximum height is only 1.80 meters above flood level. A test pit near the northeast edge of the elevation showed the soil to be black to dark brown, with sherds to a depth of 1 meter. Below that was sterile dark gray to gray clay. Hilbert comments briefly on the pottery:

> The quality of this ceramic is striking. Undoubtedly one of the centers of the Marajoara Phase, with pottery like Pacoval do Ararí or to a certain extent, the cemetery mound [Mound 1] of the Camutins. Anthropomorphic and zoomorphic applique, so frequent at Pacoval, is nearly absent here. There are many sherds from shallow bowls, generally with undulating rims and two-part vessels like those from Fortaleza not far to the south [see Palmatary, 1950, pls. 66, 67, 70]. Painting with polychrome designs on a lustrous white slip is common. [Hilbert, pers. corres.]

In a small sample of 71 sherds, 65 were classified by Hilbert as gray cored and 6 orange cored, giving a ratio of 92 percent Inajá Plain to 8 percent Camutins Plain. Pacoval Incised appears to be frequent among the decorated types (ibid.).

PANELLAS

Farabee (1916 b) records a visit to "Ilha das Panellas" on the Fazenda Cacuero, where he says Rempkin had previously dug. At the beginning of the rainy season it was 3 feet high, 50 wide, 100 feet long, and surrounded by water. Since it seemed "all dug over" he decided further excavation would be unprofitable.

In July, 1928, Mordini spent 10 days excavating a trench 5 by 3 meters and 4.50 meters deep in a mound called "Panellas." The soil was uniformly black with an intermixture of ashes at a depth of 3.50 meters. Although he has never published the results, a cross-sectional drawing of the vessels in situ is reproduced in Palmatary (1950, p. 279), together with a listing of their descriptions and contents.

SANHARÃO

No clue is given to the whereabouts of this mound, listed by the Barão de Marajó (1895, p. 87).

SANTA BRIGIDA

This site is west of Lago Ararí, on the Igarapé Cuieiras, a tributary of the Anajás-mirí (Anajasinho). Palmatary, who made a brief visit, describes it as 12 feet high and some two acres in area. One side was tested and

> in the space of about two hours, the workmen removed two large, undecorated jars, lacking their tops, one plain shallow dish, a painted and engraved concentric dish, more or less complete, and fragments of several large vessels. No effort was made to determine stratification but, within the limits of the small area excavated, decorated and undecorated wares seemed buried close together and in confusion. [Palmatary, 1950, p. 278.]

A sample of 123 sherds collected in 1941 by Carlos Estevão de Oliveira is deposited in the Museu Goeldi, Belém. It was classified by Hilbert on the basis of core color, giving 68 sherds or 55.2 percent gray cored (Inajá Plain) and 55 sherds or 44.8 percent orange cored (Camutins Plain). Decorated types include Anajás Plain Incised, Anajás White Incised, Ararí Plain Excised, and Joanes Painted (Hilbert, pers. corres.).

This may be the mound described to Lange (1914, p. 301) as located several days travel up the Anajasinho, 15 meters in height and full of pottery.

SANTA IZABEL

Ferreira Penna reports:

> In 1873 I visited this mound, situated in the campo northwest of Lago Ararí. It is difficult to find the site without a guide, because the artifacts are buried in an area that is level and flat like the surrounding campo. Although smaller and with fewer artifacts than Pacoval, it is nevertheless the only site that can

> rival the latter in the choice of material and in the perfection of the incised and painted designs of the ceramics.
>
> It was here that I first found several *Tinteiras*, indispensible utensils of the aboriginal painters, all of them ornamented with elegant and delicate reliefs [probably excised designs]. One contained a good-sized lump of very fine, red-colored clay. . . . [1879 a, p. 51.]

SANTO ANDRE

Once more, there is only the mention of a mound near the Fazenda Santo Andre called "Pacoval" (Marajó, 1895, p. 88). A *fazenda* by that name is located on the Rio Paracauarí, which flows east to Soure.

SERRA

A mound of this name is said to exist in the area bounded by the Rios Ganhoão and Cururú and Lagos Mututi and Asapão, which would place it north of Lago Ararí (Mordini, 1934 a, p. 62).

TAPERA

No location is given for this mound, but there is a *fazenda* of the same name about half way between Lago Ararí and the east coast. Holdridge excavated in this area in 1932 (1933 a; 1939, p. 105). Lage (1944, pp. 219–220) says the ceramics are more elaborate than at the Camutins.

TESO DAS IGAÇABAS

In 1922, Nimuendajú visited a site called "Teso das Igaçabas," in the Cabo Maguarí region, about 1 km. south of the Fazenda Boa Esperança. It produced pottery in the Marajoara style. He gives the following brief description of the dimensions and contents:

> An old negro could still remember that in his youth several big vessels had been excavated here. The excavators before me seemed to have set about their work very seriously, for in the mound, which was only 10 by 20 M at the utmost with a thickness of about 40 cm, I found but insignificant fragments. . . . although most of the fragments were of inferior material and coarsely manufactured, there were several pieces here which were carefully executed, and above all, some with the characteristic painting in Marajó style, red and black on white ground. On the rims of the vessel were round projections, which had served as handles. One fragment shows traces of having been used for smoothing arrow shafts. [Nimuendajú, in Rydén, MS.]

TESO DE SEVERINO

Lange describes a visit to a mound 6 miles east of Pacoval, which probably was Teso de Severino:

> Here we spend two whole days, returning with a canoe full of pottery, some of which is in fragments. The mound we visited is elevated hardly two feet above the level of the surrounding country, in the middle of a difficult piece of prairie, soggy and overrun with an uneven, coarse growth of wild cotton plants. Old

> Ludovico [the guide] indicated this spot as being likely to contain a great deal of pottery, particularly as no excavations have ever been undertaken there. I find there pottery of a totally different character from that near Ludovico's [Pacoval]. The clay from which this was made seems to be lighter in colour and weaker, or else the burning was not so thorough as the other. All the vessels I find are of a different shape too, and one large bowl, which we unfortunately break by accidentally putting the point of the pickaxe through the bottom, is a strange piece of work full of fine details. [Lange, 1914, pp. 330–331.]

The pottery from this site in the American Museum of Natural History (collected by Lange) includes mainly Anajás White Incised, with jars of Common shape 8 and rare shape 1 predominant.

Another collection was made by Carlos Estevão de Oliveira in 1925, which Mordini examined (1934 a, pp. 63–64). He found the ceramics superior to those from Pacoval in painted and incised decoration and in fineness of paste, firing and skill of workmanship, but inferior to the latter in plastic decoration of an anthropomorphic and zoomorphic nature. Several pieces were partly covered with a kind of glaze. The tanga designs were also distinctive:

> The decoration is very carefully done, and it is noteworthy that it includes very complex and graceful anthropomorphic stylizations, motifs unknown on these objects at Pacoval do Arary, where the decoration is exclusively geometric. The frieze characteristically found on the upper edge [at Pacoval] . . . is absolutely unknown on tangas from Teso de Severino. [Op. cit., p. 64.]

The most recent account is given by Hilbert (pers. corres.), who excavated at Teso de Severino in 1951. He describes it as 4 km. upstream from the mouth of the Igarapé das Almas (Igarapé do Severino) and some 400 meters in from the left bank. The site has been taken over as a foundation for a corral and cowboy barracks with much damage to its original condition. Hilbert reports that the bare patches around the buildings show many sherds and on the basis of their distribution estimated the site to extend approximately 75 meters northeast-southwest by 50 meters wide. It now has an elevation of only 50 cm. Three test pits in various spots produced sherds to a depth of 20 to 50 cm. Of the 146 sherds collected, 125 or 85.6 percent are gray cored and 21 or 14.4 percent are completely oxidised. Decorated sherds are abundant and run the gamut of the more elaborate types. The sample included 5 hollow rims and 20 tanga fragments, of which 13 are white-slipped and 7 red-slipped.

Bibliography: Hilbert, pers. corres.; Lange, 1914, pp. 330–331; Mordini, 1934 a, pp. 63–64.

TESO DOS CHINA

About 1 km. south-southeast of the south end of Lago Guajará is a group of 11 mounds of varying size, known collectively as "Teso dos China" (fig. 113). The majority are covered with large trees, which mark their location in the otherwise flat and treeless *campo*. There is no nearby *igarapé*, and the mounds are arranged over an area roughly 750 by 350 meters. The average elevation was only 50 to 100 cm. above the flood level in February, but except in unusual instances the water level of the rainy season does not rise sufficiently to inundate the mounds. Hilbert, who is the first to describe this group, has provided some details of the condition of the individual sites (pers. corres.):

Mound 1: Approximately 100 by 60 meters, with an elevation [29] of 1.80 meters at the north and 2.50 meters at the south. A 1- × 1-meter test excavation in the south summit produced brownish soil and sherds to a depth of 30 cm.

Mound 1 A: Northernmost of the group, about the same dimensions as Mound 1, but with a flat surface only 50 cm. in elevation. The northern half is covered with grass and bushes. A clearing on the southern half for cattle branding has exposed abundant surface sherds.

Mound 2: About 50 meters in diameter, with a flat surface 80 cm. above the February water level. It is overgrown with large trees and few sherds are visible on the surface.

Mound 3: About 90 × 30 meters, with a flat summit 50 cm. above water level. The surface is covered with large trees and many small sherds.

Mound 4: About 20 × 30 meters and 50 cm. in elevation. Surface conditions duplicate those of Mound 3.

Mound 4 A: Very small, covered with bushes, but with abundant surface sherds.

Mound 4 B: Approximately 25 × 45 meters and 50 cm. in height; covered with grass except for a clearing where many sherds are visible.

Mound 4 C: About 25 × 30 meters and 50 cm. in elevation. Surface covered with grass revealing few sherds.

Mound 4 D: Very small.

Mound 5: About 40 × 50 meters and 50 cm. in height; covered with grass except for clearing exposing abundant sherds.

Mound 6: About 90 meters long by 40 meters in maximum width. Altitude at south end a little over 1 meter, less at north end. A test excavation in the south summit produced brown humus with frequent sherds to a depth of 30 cm; sparser sherds to 45 cm., and below that sterile whitish, sandy clay.

Experience with other Marajoara Phase sites would suggest that Mounds 1, 1A, and 6 might be cemeteries and the rest habitations. No burial vessels were encountered in the test excavations, however, and all of the sites present a relatively large amount of decorated types in the surface collections.

Surface collections were made from most of the mounds, and Hilbert kindly sent to us for examination those from Mounds 1, 2, 4, 4A, and 5. as well as the sherds from the strata cut in Mound 1. The surfaces have suffered badly from erosion, but close examination showed that in addition to Inajá Plain and Camutins Plain, nearly all of the Marajoara Phase decorated types were present. Although the samples were

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[29] Figures represent amount of exposed elevation during the rainy season when the surrounding *campo* was flooded to a depth of 50 cm. Actual elevation would thus be 50 cm. greater.

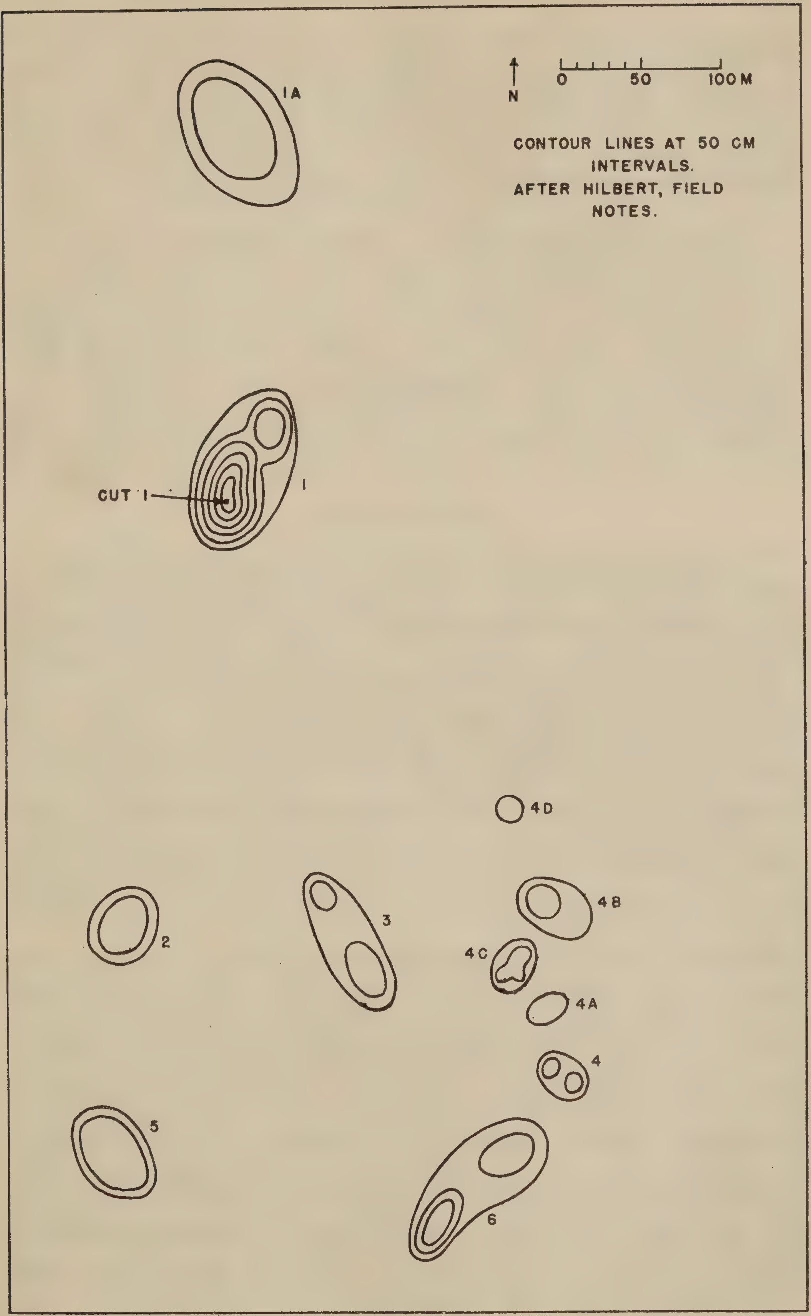

N
0
50
100 M
CONTOUR LINES AT 50 CM INTERVALS.
AFTER HILBERT, FIELD NOTES.
1A
CUT 1
1
4D
4B
4C
4A
4
2
3
5
6

FIGURE 113.—Plan of Teso dos China mound group of the Marajoara Phase.

small, none comprising more than 50 sherds, it was possible to classify them and to use the data for seriation by limiting the criterion of classification to core color and ignoring for the moment any surface decoration. This device makes it possible to see more accurately the relative proportions of the two plain wares, whose fluctuations provide the most reliable basis for seriation. This generalization gave the following figures (for sherd totals, see Appendix, table 41):

Table K.—*Frequency of Inajá and Camutins Plain at Teso dos China*

Mound	Inajá Plain	Camutins Plain
	Percent	*Percent*
1: level 0–15 cm	58.6	41.4
1: level 15–30 cm	68.7	31.3
2: surface	70	30
4: surface	82.5	17.5
4 A: surface	66.6	33.3
5: surface	62.5	37.5

TESO DO GENTIL

Two kilometers above its mouth, the Rio Anajás-mirí is joined by a tributary from the north, called Igarapé do Gentil. Hilbert (pers. corres.) located two Marajoara mounds along its course about 1.5 kilometers above the confluence. At present, they are separated by a dry arm, with the *igarapé* passing along their eastern ends. The area is open *campo* with patches of trees and bushes. Mound 1, 50 meters long by 20 meters wide, had a maximum elevation of 2 meters above the flood level. A *caboclo* house occupied the western end. A test pit in the summit showed reddish-brown loam producing sherds to extend to a depth of 40 cm., beneath which was the sterile clay forming the foundation of the mound. Mound 2, about 25 meters north of the east end of Mound 1, was about 20 meters in diameter and 1.5 meters in elevation.

A sherd sample sent to us for examination proved to contain typical Marajoara Phase wares. Half of the 20 sherds from Mound 1 represented decorated types, including 5 Ararí Plain Excised and 1 each of Pacoval Incised, Guajará Incised, Goiapí Scraped, Joanes Painted and Unclassified Decorated. Only 3 of the 18 sherds from Mound 2 had any decoration, with 1 each of Pacoval Incised, Joanes Painted and Goiapí Scraped. Added to the difference in size, this suggests that Mound 1 was a cemetery and Mound 2 a habitation site. Disregarding the decoration and classifying the sherds by the plain ware they represent gives a ratio of 50 percent Inajá Plain to 50 percent Camutins Plain for Mound 1, and 61.1 percent Inajá Plain to 38.9 percent Camutins Plain for Mound 2.

TESO DOS GENTIOS

Mordini gives no specific location for this mound, which he excavated in 1926, mentioning only that it is north of Lago Ararí. Although he has not published his findings, some of the field notes are reproduced by Palmatary (1950, pp. 278–279). He made an excavation 5 by 3 meters in extent and 2 meters in depth. The soil was black to a depth of 80 cm., below which it became "black and slightly yellow." The diagram (op. cit., p. 279) shows the ceramics to extend to a depth of 1.50 meters, the final 50 cm. of the excavation presumably being sterile. Plain and decorated burial vessels were recovered, the latter including Joanes Painted and unidentifiable "engraved" types, which probably represent both incised and excised. Although the diagram is not to scale, the measurements in the text show that the jars in the lower level are considerably larger than those in the upper one. Some contained miniature vessels, fragments of bone and ashes. No tangas are mentioned.

UNNAMED MOUNDS

In addition to the mounds just listed, there are several less specific references to the existence of other sites on Marajó. Barnard reported to Hartt that "Indian burial stations are quite numerous in the centre of the island" (Hartt, 1871, p. 260). Derby, in describing Pacoval, adds that "several other localities on the shores of the lake [Ararí] have yielded a similar kind of pottery . . ." (1879, pp. 225–226). Lange reports a crescent-shaped mound at the outlet of the lake, which is probably a habitation site (1914, p. 332) and another cemetery:

> During the months when the waters fall very low there appears in the middle of the lake, some two miles to the northward, a flat clay-and-sand bank, some fifty feet only in circumference. Here is to be found a great deal of pottery similar to that of Pacoval. [Op. cit., pp. 311–312.]

In Hartt (1885, p. 25) is the information that "there exist mounds of the same kind [as on the Camutins] on the Rio Mocões, on the Igarapé Grande, on the Rio Camará and in various places on the campos." Mordini mentions a series of 7 small mounds between Cajuliros and Faz Café, which may be habitations (1934 a, p. 62). On the *fazenda* of Dr. Vincente Miranda, Farabee "located several of medium size and excavated four without finding a solitary thing of value. They had been used as house sites only, as was indicated by the presence of ashes and fragments of pottery" (1921, p. 144). Pinto (1930, p. 351) speaks of mounds near Soure. Statements like these support the conclusion that many more Marajoara sites exist than have found their way into the literature. It seems probable that these include a large number of habitations.

CONCLUSIONS

On the basis of these descriptions of Marajoara Phase mounds, a few general conclusions can be drawn:

1. There is no intentional orientation toward any of the cardinal points; rather, orientation depends on the contour of the river or lake shore or is arbitrary.
2. There is no intentional effort toward the production of a zoomorphic shape. The majority of the mounds are oval or nearly circular, and those interpreted as turtle-shaped are some that have suffered badly from erosion.
3. In addition to the large, ceramically rich cemeteries, there are numerous habitation mounds, which are typically smaller and contain predominantly plain pottery.
4. The mounds continued to be enlarged after they were in use, as indicated by the existence of layers of sterile soil between those producing sherd refuse.

ANALYSIS OF MATERIALS OF THE MARAJOARA PHASE

Pottery Type Descriptions

The classification of Marajoara Phase decorated pottery into a readily distinguishable and workable number of categories has been a difficult task, largely because of the frequent utilization of two or more complex and technically distinct modes of decoration on a single vessel. This is a situation almost without precedent in New World archeology. Even the advanced cultures of Mexico and Peru rarely employed one type of decoration on the exterior and a totally distinct type on the interior of the same vessel. Obvious difficulties arise. If the classification recognizes all the possible combinations, there results an involved collection of categories that is not only a strain on the memory, but also has the drawbacks that important associations between particular decorative techniques and vessel shapes are obscured and that the completeness of the vessel will influence its classification. If the classification is made on decorative technique without regard to combinations, it will not apply to some specimens, but only to one or the other of their surfaces. Since the choice of a method of classification depends on the results it is expected to produce, the second alternative has been used here for the following reasons: (1) It is equally accurate and applicable for sherds and for complete vessels; (2) it permits statistical analysis of the relative frequency of each decorative technique at any given time or place; (3) it provides a workable number of easily distinguishable categories.

By the completion of the analysis, two more justifications had become evident. In more than 90 percent of the cases where two techniques were used on the same vessel, one of these is Joanes Painted, and of the four cemeteries included in the study, only at Pacoval is there a high proportion even of this association. Another point brought out by this classification is the high degree of consistency with which certain vessel shapes are associated with particular decorative techniques, such as hollow-rimmed bowls with Pacoval Incised or Anajás White Incised, and flat-bottomed, cylindrical jars with Ararí Red Excised.

Those specimens exhibiting more than one decorative technique were classified primarily according to the more complex technique (which was nearly always on the exterior) represented, with the following order of precedence being used: double-slipped excised, double-slipped incised, excised and retouched, incised and retouched, excised, incised, painted, and scraped. However, other techniques associated on a single vessel are listed in each type description.

Additional decisions had to be made regarding the classification of the varieties of excised and painted decoration. Up until the publication of the preliminary report (Evans and Meggers, 1950), decoration in which part of the original surface of the vessel was cut away, leaving the remainder in relief, was referred to as "champlevé". The decision was made to abandon this terminology and substitute the term "excised" because the standard definition describes champlevé as "having the ground engraved or cut out" and being "inlaid in the depressions in the ground" (Webster's Unabridged Dictionary). Only one variety of excised decoration, Ararí Red Excised, White-retouched, has the excisions inlaid and has a consistently large proportion of the surface cut away. In Ararí Red Excised and Ararí Plain Excised, there is wide variation in the amount of excision, in some cases being confined to one or two excised lines around the vessel at the upper and lower limits of the design area, which is predominantly incised. For the purpose of classification, all examples with any excision were classified as excised because of the fact that the technique was the same regardless of the extent to which it was used on a single vessel. An alternative would have been to subdivide the categories by the proportion of the surface excised, but because of the gradual and continuous variation between the two extremes, this would require constant and often subjective decisions that would inevitably differ with each classifier. By drawing the line between "any" and "none," there is no question as to how a given sherd should be classified. The validity of the inclusion of vessels with a minimum of excision in the excised type is substantiated by the fact that the vessel shapes are those typical of the excised rather than the incised types.

The classification of painted designs presented similar problems. A number of varieties of painting are represented on Marajoara Phase vessels, including red-on-white, black-on-white and three different combinations of red and black on a white slip. Although a distinction between these would be desirable, this was not made because it did not seem to give reliable results. Many of the painted sherds have been subjected to considerable erosion, so that only a trace or two of the original paint remains. If this were red, it would not necessarily imply that black was not also present originally, and vice versa. To regard painting as a unit, therefore, for purposes of classification, seemed to be the only sound procedure. Even when this is done, Joanes Painted shows a significant decline in frequency during the Marajoara Phase.

The classification of the decorated types that follows, therefore, has three points in its favor:

1. The limits of the types are sharply defined and unmistakable.
2. The types (with few exceptions) share characteristic design motifs and vessel shapes as well as the primary criterion of classification (slip, excision, incision, scraping, etc.).
3. The types show clearly defined trends when viewed in temporal perspective.

The following descriptions of Marajoara Phase plain and decorated pottery types are based on the analysis of the sherd and vessel collections at the American Museum of Natural History in New York, the Peabody Museum of Harvard University in Cambridge, Mass., the University Museum in Philadelphia, Pa., the Museum of Anthropology in Ann Arbor, Mich., the Museu Paraense Emilio Goeldi in Belém, Pará, Brazil, and our excavated material. The types have been given names according to the binomial system of designation, and are arranged in alphabetical order.

ANAJÁS DOUBLE-SLIPPED INCISED

PASTE: On Inajá Plain or Camutins Plain; see those type descriptions for details of paste and unslipped surface.

SURFACE:

White slip—primary slip:

Color: White, occasionally fired cream or light tan.

Treatment: Thick, usually well smoothed, occasionally with low luster. Smoothing tracks often remain. Fine to coarse crackle frequent on the interior.

Hardness: 3.

Red slip—secondary slip:

Color: Cinnabar red, sometimes fired purplish brown, reddish brown or rusty red.

Treatment: Very thin, smooth, sometimes with a low luster.

Hardness: 3.

FORM:

Rim: Interiorly or exteriorly thickened with a rounded lip, or everted with a flat top.

Body wall thickness: 6–12 mm.

Base: Rounded or flat.

Common vessel shapes:

1. Small, rounded bowls with rim slightly thickened on the interior, with a rounded lip. Depth, 5–9 cm. (Palmatary, 1950, pl. 7, b). Both surfaces white slipped, except the bottom of interior of some; exterior double-slipped and incised. Coils occasionally added around the maximum diameter on the exterior (fig. 114–1).
2. Bowls with flattened bottom, sides sloping outward and then upward producing slightly carinated profile, increased on one by exterior thickening. Rim everted, flat or concave topped with a rounded

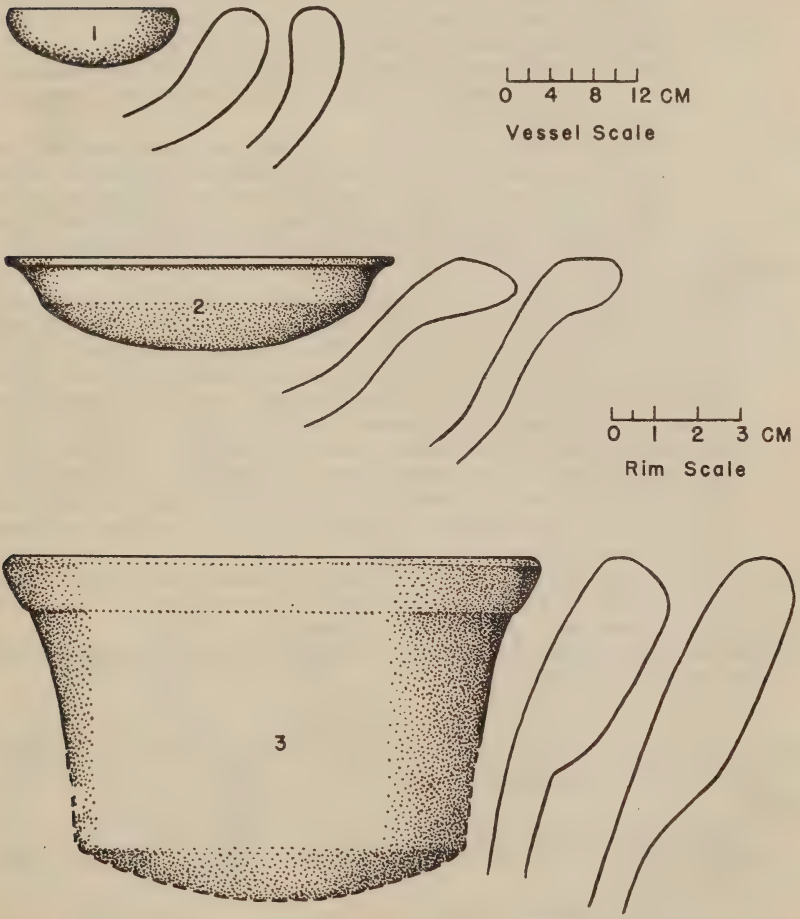


FIGURE 114.—Rim profiles and vessel shapes of Anajás Double-slipped Incised of the Marajoara Phase.

slightly thickened lip; maximum rim diameter 36 cm. Both surfaces white slipped, exterior double slipped and incised (fig. 114–2).

3. Open basins with heavy, exteriorly thickened rims. The thickened rim is 5–7 cm. wide, 1.5–2.2 cm. thick; body wall thickness 0.7–1.0 cm. White slip on both surfaces, double slip and incision on rim exterior; body exterior is Anajás White Incised or Pacoval Incised (Palmatary 1950, pl. 39, i). Two other sherds from similarly shaped jars have smaller rims, double slip and incision covering the entire exterior. Rim diameter ranges 48–50 cm. (fig. 114–3).

Rare vessel shapes:

1. Jar with a vertical neck and direct rim with a rounded lip. Rim diameter 10 cm. Both surfaces white-slipped, exterior is double-slipped and incised (Palmatary 1950, pl. 35, d).
2. Large jar with small, flattened bottom, globular body joining an insloping neck at the rounded shoulder, everted and exteriorly thickened rim. Vessel height is 92 cm. Neck exterior double-slipped and incised (Palmatary, 1950, pl. 96, a).
3. Globular-bodied jar with constricted mouth and exteriorly thickened rim with a rounded lip. Interior rim diameter 10 cm. Exterior is double slipped and incised.
4. Anthropomorphic jar with two faces modeled on opposite sides of a bulbous neck and separated by ears which serve for both. Vessel mouth has exteriorly thickened collarlike rim at the top of the heads; mouth diameter 4 cm. Double slipped to chin level, fine incised lines outlining the facial features; body is Pacoval Incised.

DECORATION (pl. 50):

Technique: Slipped red over white and ornamented with incised lines 1 mm. or less in width on one-third of the examples and 2–3 mm. wide on most of the remainder, with a maximum width on one sherd of 4 mm. Width is uniform on a single sherd. Lines are generally straight and deep, always cutting through the red slip and on 30 percent penetrating through the white slip to the orange paste to some extent.

Motif: Anajás Double-slipped Incised is not a homogeneous unit as far as the motif is concerned. The elements and composition of each design are unique, with the exception that simple spirals appear on about 25 percent of the sherds. Other motifs include frets, "keyholes," scallops, and areas filled with parallel lines.

ASSOCIATED TECHNIQUES: Anajás White Incised or Pacoval Incised may occur on the body when the double slip is confined to the rim or neck.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE: Restricted to the early and middle parts of the Marajoara Phase sequence.

ANAJÁS PLAIN INCISED

PASTE AND SURFACE: On Camutins Plain or Inajá Plain, see those type descriptions for details of temper, firing, color, etc.

FORM:

Rim: Usually exteriorly thickened or everted, sometimes direct.

Body wall thickness: 4–15 mm.; thickness above 10 mm. is limited to large, open bowls.

Base: Rounded, flat or annular.

Common vessel shapes:

1. Large open bowls with rounded to slightly angular, outsloping sides

and exteriorly thickened rim. Diameter 22–34 cm. Incision typically limited to flat or concave rim top (fig. 115–1).

2. Small bowls with rounded bottom, sides curving to a direct rim. Mouth diameter 9–16 cm. Incision on exterior (fig. 115–2).
3. Carinated bowls with rounded bottom joining slightly insloping walls at a rounded angle. Rim diameter 21–24 cm. Incision on wall exterior below the thickening (fig. 115–3).
4. Small jars with flattened bottom, globular body, short, vertical or concave-sided neck and everted or thickened rim. Body diameter 6.5–14.0 cm. at Pacoval, 17–26 cm. at Camutins. Incised lines on

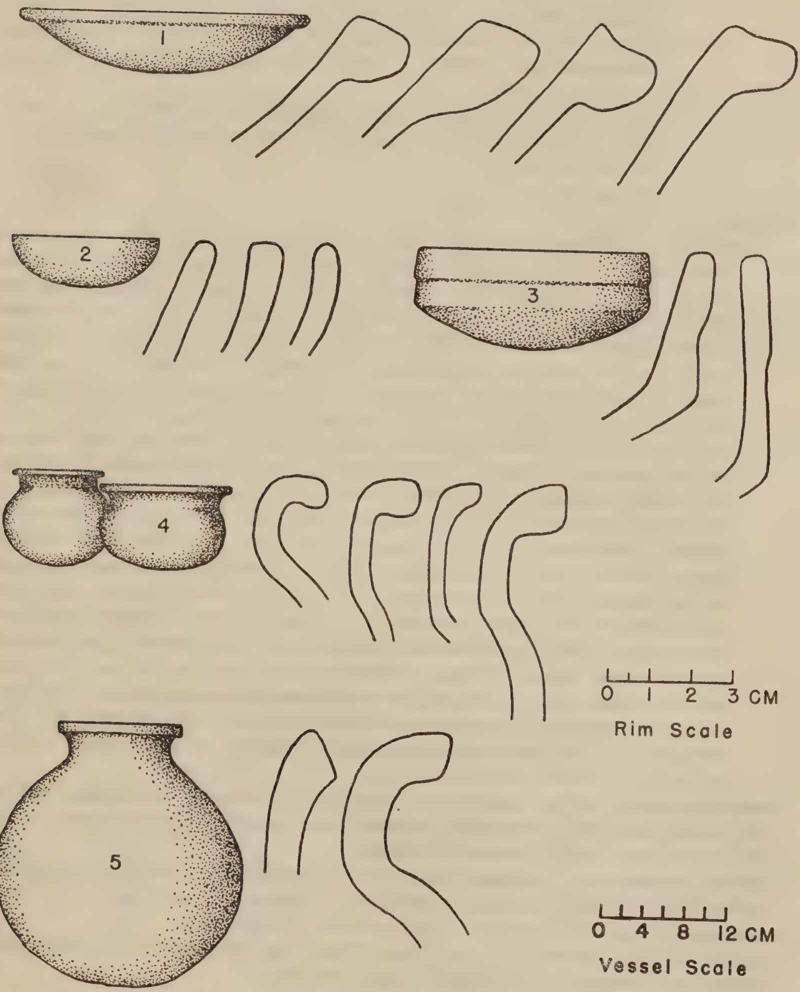


FIGURE 115.—Rim profiles and vessel shapes of Anajás Plain Incised, Marajoara Phase.

neck alone or neck and body; applique ribs sometimes also present (fig. 115–4; pl. 52, *d-g*; Palmatary, 1950, pls. 32, e, 47, d).

5. Jars with flattened bottom, globular body, constricted mouth and everted rim. Height 17–34 cm. Incision covers the upper two-thirds of the body (fig. 115–5; pl. 51, *a-b*; Palmatary, 1950, pl. 13, a-b).

Rare vessel shapes:

1. Cylindrical jars with flat bottom, upslanting sides and exteriorly thickened rim (the same form as Ararí Red Excised, common shape 6, fig. 118–6). Incision is on the exterior.
2. Jar with rounded body, short insloping neck and direct rim. Rim diameter 20–32 cm. Incision on the exterior of the body or neck.
3. Miniature jar with flat bottom, slightly insloping sides and exteriorly thickened rim. Height 8.7 cm.; base diameter 7.8 cm. Incision covers the exterior.
4. Miniature jars with large, "wing" adornos rising from the opposite sides of the shoulder (pl. 52, *a-c*). Incision covers the exterior.
5. Stools (pl. 83, *d, f, i*).
6. Figurines (pl. 79, *d*).

DECORATION (pl. 51, 52):

Technique: Designs are executed with incisions averaging 1 mm. in width or wide incised lines averaging 2 mm. in width; the two widths of lines are almost never combined on the same vessel. Lines are typically sharply defined, but the quality of the incising and of the designs varies from exceedingly crudely done examples where the lines are crooked, unequally spaced and of unequal depth to carefully laid out designs with the lines straight, parallel and equally spaced. This well executed type of design is particularly characteristic of small jars of common shape 3.

Motif: Anajás Plain Incised designs are typically composed of large areas or bands containing straight, parallel lines. The monotony may be relieved by having the lines in one sector running at right angles or diagonally to those in the adjacent one. A similar alternation in direction may occur in the bands. Incision on bowls is frequently restricted to 2–3 parallel lines on the upper rim edge. Decoration on jars may be limited to a band of vertical or horizontal, parallel lines around the neck. A more complex treatment is the division of the surface into large squares which are divided by diagonal lines into 4 triangles containing parallel lines. Occasional jars have diagonal cross hatch. Simple, predominantly rounded spirals are also relatively frequent. Scalloped lines and concentric triangles are rarer, and rectangles, ovals and arrows are limited to one or two examples. Also rare are intricate and complex designs resembling those of excised types, but without the background cut out.

ASSOCIATED TECHNIQUES: Applique ribs; stylized anthropomorphic faces with the features in low relief outlined by incised lines. Joanes Painted occurs on the interior of some bowls of common shape 1.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Examples from Pacoval are generally better done than those from the later sites. Common shape 3 shows a marked increase in size from the early to late part of the sequence.

CHRONOLOGICAL POSITION OF THE TYPE: Present at all sites of the Marajoara Phase, but increases in frequency in the later ones.

ANAJÁS RED INCISED

Paste and surface: On Camutins Plain or Inajá Plain; see those types for details of paste and unslipped surfaces.

Slipped surface:

Color: Cinnabar red, sometimes with orange tint.

Treatment: Typically thinner than the slip applied to excised surfaces and more comparable to Carmelo Red in thickness. Smooth, often with slight luster, occasionally with faint smoothing marks.

Hardness: 3–4.

Form:

Rims: Direct, everted or exteriorly thickened with rounded lip.

Body wall thickness: Typically 6–11 mm., rarely 13 mm.

Base: Rounded, flat or annular.

Common vessel shapes:

1. Small bowls with rounded bottom, sides curving outward or upward to direct rim, sometimes with scattered small adornos. Rarely the rim is exteriorly thickened. Rim diameter 7–18 cm. Incision is on the exterior (fig. 116–1, pl. 53, *f–h*).
2. Large, open bowls with annular base, outsloping sides and exteriorly thickened rim. Rim diameter 15–28 cm. Incision usually limited to the rim top or rim exterior and both surfaces of annular base, but may cover the exterior (fig. 116–2).
3. Bowls with rounded bottom, slightly carinated walls and everted or exteriorly thickened rim. Maximum diameter, 38 cm. Incision on the exterior (fig. 116–3).

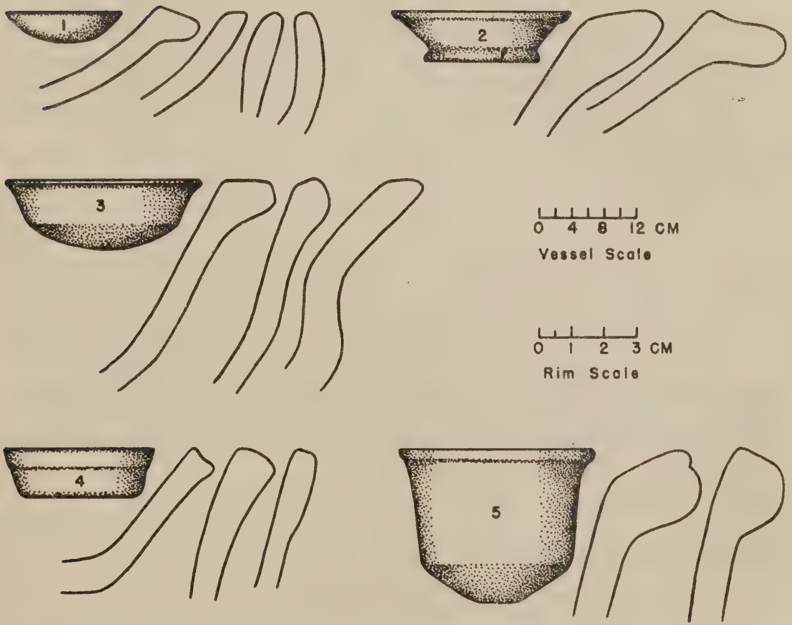


Figure 116.—Rim profiles and vessel shapes of Anajás Red Incised, Marajoara Phase.

4. Bowls with flat bottom, vertical or outsloping sides expanding and interiorly thickened on the rim. Diameter 14–20 cm. Circumference may be circular or heart shaped, lip level or undulating. Incision covers the exterior (fig. 116–4).
5. Large, deep bowls with slightly outslanting sides, everted or exteriorly thickened rim, probably rounded or conoidal bottom (fig. 116–5; Meggers, 1947, pl. 2, fig. 3).
6. Jars with rounded bodies indicated by several body sherds; too small to give further details of shape.

Rare vessel shapes:

1. Carinated bowl with flat, conoidal bottom, joining concave walls at a rounded angle, direct rim. Height 23.7 cm. Incision on the exterior walls (Palmatary, 1950, pl. 23, b).
2. Miniature, oval-bodied vessel, small orifice at center of top with exteriorly thickened rim and flattened bottom. Length 7.5 cm., width 6.5 cm., height 6.5 cm. Incision covers the exterior. (Shape is similar to the excised vessel illustrated in Palmatary, 1950, pl. 41, d.)
3. Shallow bowl with rounded bottom and outsloping sides, latter inset at the junction so as to leave scalloped, horizontal flange. Depth 2 cm. Incision covers the exterior except on the flange.
4. Stools. Incision covers the disk.
5. Figurines.
6. Earspools (fig. 134).

Decoration (pl. 53):

Technique: Red-slipped surfaces are incised with deep, sharply defined, narrow (1 mm. or less in width) to wide (usually around 2 mm., occasionally 3 mm. or more) lines, typically of uniform width and depth on a single specimen. The lines are rarely straight, and often are unevenly spaced and overlap at points of intersection. One small bowl has wide lines, broken to produce dashes of irregular length in conjunction with regular incision. Broad, deep lines reveal the underlying orange or gray paste.

Motif: Anajás Red Incised designs show no emphasis on any particular motif. On the contrary, they tend to borrow motifs from various incised styles; e. g., double-line design featuring scallops, typical of Guajará Incised, and bands or areas containing evenly spaced parallel lines, typical of Anajás Plain Incised. Other figures include steps, concentric rectangles, concentric triangles, angular or rounded spirals, and "keyholes." The combinations are usually simple, often leaving large unincised areas. Patterns that cover the entire surface with closely spaced, parallel lines forming angular spirals are very rare (Palmatary, 1950, pl. 35, h).

Associated techniques: Joanes Painted on some bowl interiors with small adornos on bowl rims. Anajás Red Incised may occur on a band just below the rim on cylindrical jars having Ararí Red Excised or Ararí Red Excised, White-Retouched on the bodies.

Temporal differences within the type: None.

Chronological position of the type: Decreases in frequency and disappears before the end of the Marajoara Phase.

ANAJÁS WHITE INCISED

Paste and surface: Majority on Inajá Plain with the rest on Camutins Plain; see those type descriptions for details of paste and unslipped surfaces.

SLIPPED SURFACE:

Color: White, occasionally fired cream or light orange.

Treatment: Fine-textured, smooth, evenly applied, often polished producing a low luster.

Hardness: 3–4.

FORM:

Rims: Solid or hollow; exteriorly thickened, interiorly thickened or rarely direct, with a flat top or rounded top the most common.

Body wall thickness: 5–12 mm.

Base: Flat or rounded.

Common vessel shapes:

1. Shallow bowls with rounded bottom, outslanting sides and incurving rim thickened on the interior. Body wall thickness 5–10 mm.; rim thickness 1.1–2.0 cm.; rim diameter 12–35 cm. (Palmatary, 1950, pl. 15, a, 25, b, 31, a). Incision covers interior or exterior; geometric adornos common on the rim; lip even or undulating (fig. 117–1, pl. 55, *b*).
2. Bowls of shape 1 but with hollow rim typically produced by looping the upper edge over into the interior, giving a contour indistinguishable from that of solid rims except in cross section. Body wall thickness 5–9 mm.; rim thickness 1.5–2.7 cm. (fig. 117–2; Palmatary, 1950, pl. 38, g).
3. Bowls with sides curving upward and outward to angular junction with everted, flat-topped rim. Rim top 1.7–4.2 cm. wide. Rim adornos common, especially a trianguloid type with two eyelike eminences on the horizontal surface and terminating in 1–2 round, upturned knobs (Palmatary, 1950, pl. 106, b). Incision limited to the rim top (fig. 117–3).
4. Bowls with flat or rounded bottom, upcurving sides and direct rim with rounded or flattened lip. Body wall thickness 5–8 mm.; rim diameter 9–14 cm. Rim adornos rare. Incision on exterior of wall. Rim top usually level, occasionally undulating (fig. 117–4).
5. Bowls with flattened bottom, walls outsloping to mild carination then curving upward to an exteriorly thickened rim with rounded or angular lip. Upper wall height 3.5–6.0 cm.; rim diameter 18–30 cm.; body wall thickness 6–10 mm.; rim thickness 1.6–1.7 cm. Incision on exterior (fig. 117–5).
6. Flat-bottomed bowls with outslanting sides and exteriorly thickened rim with rounded or angular lip. Rim diameter 10–32 cm.; body wall thickness 5–12 mm.; rim thickness 1–3 cm. Rim top is level or undulating with occasional low relief adornos; incision covers the exterior (fig. 117–6; Palmatary, 1950, pl. 17, b).
7. Deep, carinated jars with depressed conoidal bottom, insloping walls, and everted, exteriorly thickened rim. Height 21–32 cm. Incision on exterior, usually confined to walls; occasional small round body adornos (fig. 117–7; Palmatary, 1950, pl. 21, a–c).

. Jars with bulbous or insloping neck, narrow mouth and everted or exteriorly thickened rim with rounded lip. Body contours are uncertain. Typical mouth diameter on interior 2.1–6.0 cm., exterior 3–8 cm. Neck occasionally connects to the body by 4 flues instead of a single central opening (Palmatary, 1950, pl. 28, j and l). Incision on exterior; rim exterior sometimes painted red (fig. 117–8).

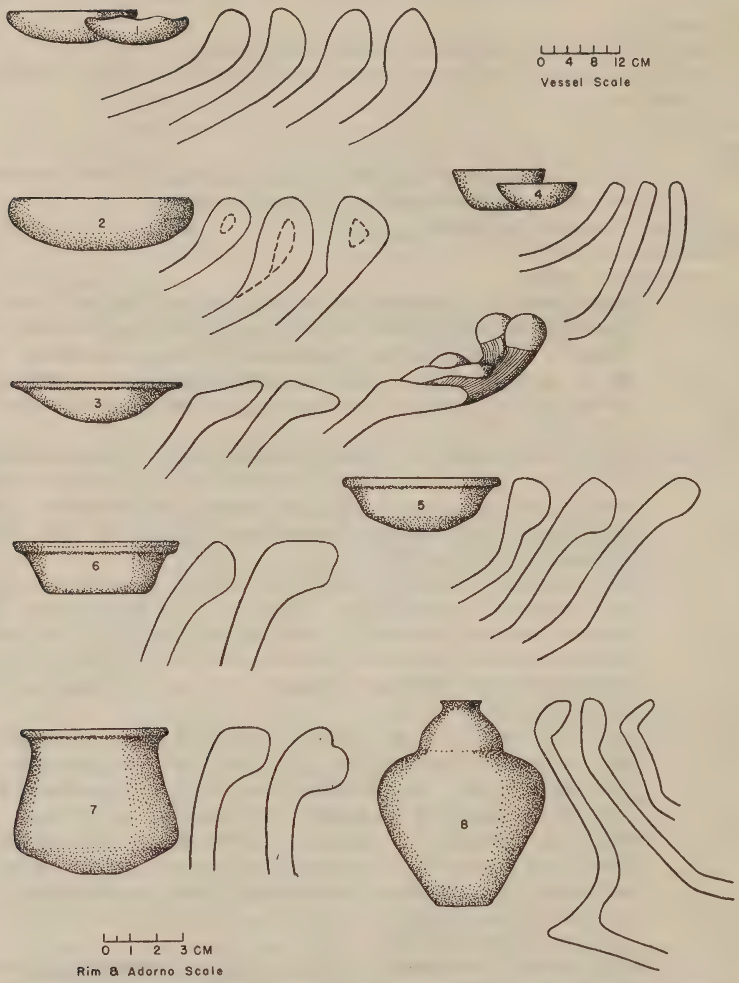


FIGURE 117.—Rim profiles and vessel shapes of Anajás White Incised, Marajoara Phase.

Rare vessel shapes:

1. Jars with two bulbous necks connected by a horizontal strap handle. One neck is covered over, the other has a narrow mouth (Palmatary, 1950, pl. 28, m). Incision covers the exterior.
2. Small, shallow bowls with rounded body and direct rim, top level or undulating. Diameter 9 cm.
3. Shallow bowls with carinated profile, walls may be nearly vertical or widely everted, rim direct or thickened. Incision on the exterior or wall interior.
4. Anthropomorphic jar with flat bottom, depressed-globular body, and a tall cylindrical neck and exteriorly thickened rim. Anthropomorphic face in low relief on one side of the neck. Incision covers

the exterior. Height 21 cm. (Palmatary, 1950, pl. 25, a). This shape is typical of Ararí Red Excised and Ararí Red Excised, White-Retouched and is represented here by only one example.

5. Miniature jar with rounded body, insloping collar-like neck and 2 zoomorphic adornos rising from opposite sides on the shoulder. Diameter 8 cm., depth 7.5 cm. Incision covers the exterior.
6. Miniature cylindrical jar, flat bottom, exteriorly thickened rim. Height 4.8 cm. Incision covers the exterior.
7. Figurines (Palmatary, 1950, pl. 100, i).
8. Stools. Incision covers the disk and sometimes the exterior of the stand (pl. 83, *c*).

Decoration (pls. 54, 55):

Technique: Sharply defined, narrow, incised lines (1 mm. or less in width) on a white-slipped surface, often drawn when slip was well hardened; typically even and straight, sometimes cutting through the slip to reveal orange paste. Designs are well executed, with lines and elements evenly spaced. Fine lines are employed in four variations, the first three of which may occur alone or in combination: (1) Single, individual lines; (2) compound or double lines, composed of two fine lines running parallel, 1–2 mm. apart; (3) paired lines connected with a series of closely spaced horizontally drawn lines giving a ladderlike effect; and (4) a wide line cutting through the slip to the underlying orange paste, a rare component except in the latter part of the Phase. Used in combination with lines of type 2, type 4 produces an effect similar to that of Pacoval Incised with a less vivid color contrast (pl. 55, *a*).

Motif: One form or another of the spiral is the major element in almost all designs. Variations include single spirals, independent interlocking spirals (sometimes triple), interlocking spirals with inner ends joined by a short line and double interlocking spirals with ends of one pair joined. Contour is typically circular, but square, triangular, lozenge and irregular forms occur. Interlocking arms may be of the same composition or any combination of the three types of lines. The designs thus produced are exceedingly light and graceful, both because of the delicacy of the incised lines and because of the careful spacing and symmetry of the motifs. Other design elements include lines with small pendant ovals, stepped lines, parallel lines and frets.

Associated techniques: Joanes Painted is frequent on the interiors of bowls with either solid or hollow rims. Pacoval Incised may occur on necks of common vessel shape 7 jars or on the rims of bowls of common vessel shapes 1 and 2 (Palmatary, 1950, pl. 40, b, 37, b). All types of rim adornos are frequent on bowls. One stool with Anajás White Incised on the disk has Ararí Red Excised on the exterior of the base.

Temporal differences within the type: Anajás White Incised appears to exist as an important type with distinctive design motifs only in the early part of the Marajoara Phase. In the sites seriating after Pacoval, many of the designs show a close similarity to those of Pacoval Incised, differing only in that a wide, unretouched line that cuts through the white slip to reveal the underlying orange paste (technique 4) is substituted for the red-retouched line of Pacoval Incised. The relative frequency of this variety in the sherd sample is shown on table L. A similar trend is observable in Ararí White Excised (p. 348).

TABLE L.—*Temporal differences in Anajás White Incised*

Technique of Incision	Decoration			
	Pacoval	Fortaleza	Camutins	Guajará
Regular incision: techniques 1-3	287	80	2	0
Technique 4, resembling Pacoval Incised	1	9	1	1

CHRONOLOGICAL POSITION OF THE TYPE: Characteristic of early sites, with a sharp decline in frequency in the latter part of the Marajoara Phase sequence.

ARARÍ DOUBLE-SLIPPED EXCISED

PASTE: Predominantly on Inajá Plain, a few on Camutins Plain; see those types for details of temper, color, firing, etc.

SURFACE:

Unslipped surface—interior of jars:

Color: Light orange to light tan to light brown.

Treatment: Superficially smoothed, leaving uneven, rough or gritty surfaces because of the protrusion of temper grains.

Hardness: 3.

White slip—primary slip:

Color: White, with firing variation from white to cream, salmon or light brown.

Treatment: Variation from smooth and even to irregular, with prominent smoothing marks and medium crackle; exterior surface usually better smoothed than interior.

Hardness: 2–4.

Red slip—secondary or upper slip:

Color: Deep, cinnabar red to purplish red to various shades of brown, occasionally almost black. Variation on single vessels indicates this to be the result of unequal conditions during firing.

Treatment: Typically a thin film, much thinner than the underlying white slip; usually smooth, even, and occasionally slightly polished.

Hardness: 2–4 on slips fired a variety of red; 5 where fired black.

FORM:

Rim: Direct, everted or exteriorly thickened, rounded or flattened lip.

Body wall thickness: 4–8 mm. on bowls, 5–11 mm. on jars.

Bases: Flat, rounded or annular on bowls, flat on jars.

Common vessel shapes:

1. Small, deep bowls with rounded bottom and walls curving upward to direct rim. Diameter 12.5 cm.; depth 5.5 cm. Both surfaces white slipped, exterior double slipped and excised (fig. 118–3).
2. Small, shallow bowls with rounded bottom, outcurving sides and exteriorly thickened rim. Diameter 12–17 cm.; depth 3–5 cm. (Palmatary, 1950, pl. 98, c ?). Both surfaces are white slipped; exterior double slipped and excised (fig. 118–1).
3. Flat-bottomed bowls with vertical or outsloping walls, exteriorly thickened or horizontal rim. Thickening on the interior at the junction of the wall and base transforms the sharp angle to a more gradual curve. Both surfaces white slipped, exterior double slipped and excised (fig. 118–4; Palmatary, 1950, pl. 66).

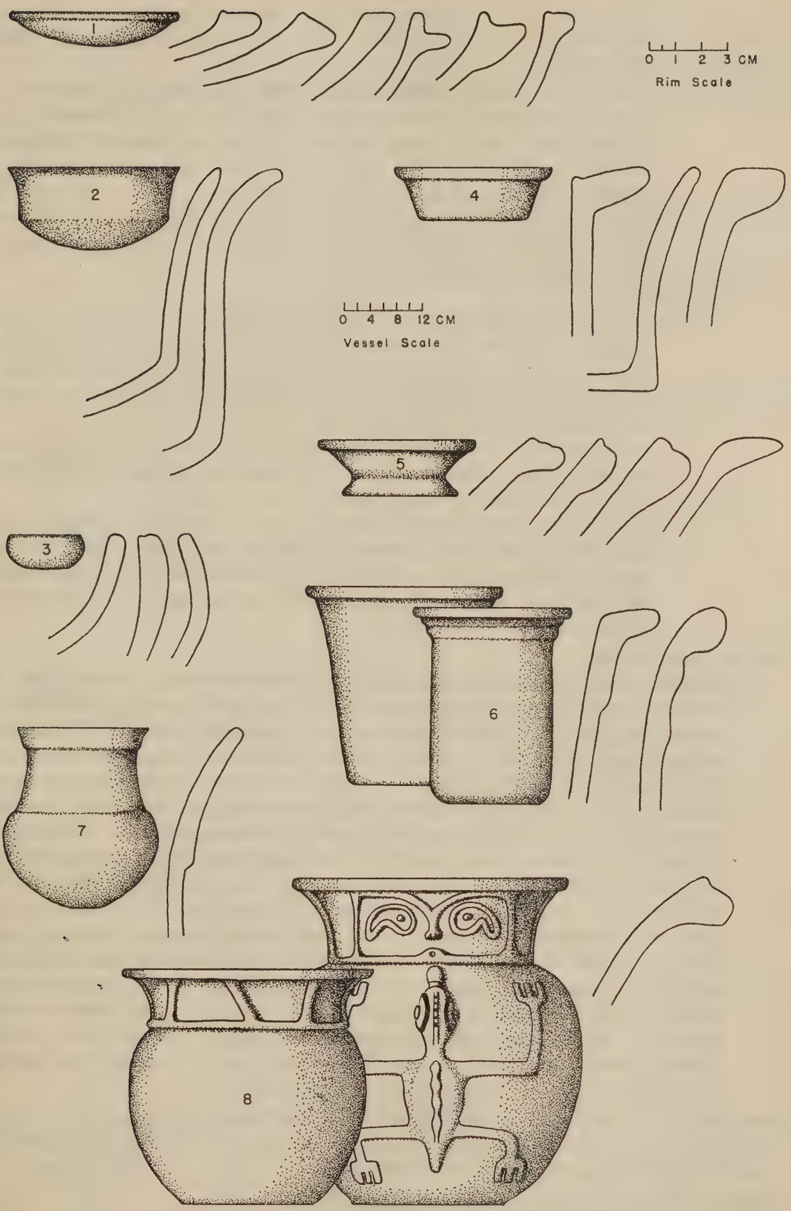

1
0 1 2 3 CM
Rim Scale
2
4
0 4 8 12 CM
Vessel Scale
5
3
6
7
8

FIGURE 118.—Rim profiles and vessel shapes of Ararí Double-slipped Excised and Ararí Red Excised, Marajoara Phase.

4. Shallow, annular-based bowls with outslanting sides and exteriorly thickened rim. Diameter 30 cm. Both surfaces white slipped, exterior double slipped and excised (fig. 118–5; Palmatary, 1950, pl. 47, h).
5. Cylindrical or semicylindrical jars with flat bottom, vertical or slightly outslanting walls, everted or exteriorly thickened rim. Dimensions probably comparable to Ararí Red Excised, common shape 6. Interior white slipped or unslipped; exterior double slipped and excised except on the bottom. (Since this pottery type is represented primarily by sherds, it is possible some may be from jars with cylindrical necks and globular bodies like Ararí Red Excised, common vessel shape 8).

Rare vessel forms:

1. Rectanguloid bowls with flat bottoms, vertical sides and direct rim. Length 13–19 cm.; height 4.5–10.0 cm. Both surfaces are white slipped; exterior double slipped, excised on the bottom and sides, stylized anthropomorphic faces in low relief on ends, mouth toward rim (Palmatary, 1950, pl. 52, b).
2. Small jars with large "wing" adornos rising from shoulder at two opposite sides. Height 6.5 cm. Excision covers the exterior of the body (Palmatary, 1950, pl. 42, c).
3. "Shoe-shaped" vessel with a flat bottom, rounded, ovoid body and cylindrical neck rising from the top of one half. Side of neck toward end bears white-slipped anthropomorphic face in low relief; remainder of surface double slipped and excised. Height 28 cm. (Palmatary 1950, pl. 48, c).

DECORATION (pl. 56):

Technique: Slipped red over white and ornamented with a combination of incised lines and excised lines and areas. Excision typically covers 40–60 percent of the design surface, although on occasional sherds it is limited to excised lines 5–6 mm. in width dividing large rectangular or triangular areas containing incised designs. Excision is carefully and evenly done, cutting away the red slip and revealing the underlying white slip; in a few cases the white slip is also removed exposing the orange paste. The bottom of the cuts is scored horizontally to the main axis in 99 percent of the examples, leaving fine, parallel striations. Occasionally excision is so shallow that traces of the red slip remain. Technique of both excision and incision is uniformly excellent, with lines evenly spaced, straight, and sharply defined, and in general represents the acme of the excised technique.

Motifs: A common component of these designs is a square containing a stylized face composed in its simplest form of two parallel lines running down the center and a small square in the middle of each half. Other typical motifs are square or rounded spirals, ovals, diamonds containing an incised cross, and lines ending in three prongs.

ASSOCIATED TECHNIQUES: Joanes Painted may be found on the interior of open bowls and is always of high quality; rectangular bowls have low relief modeling and rounded bowls may have small rim adornos.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE: An early type which declines in frequency and disappears before the end of the Marajoara Phase sequence.

ARARÍ PLAIN EXCISED

Paste and surface: On Inajá Plain or Camutins Plain, in proportions reflecting those typical of the plain wares at any particular time; see those types for details of paste, temper, firing, color, and surface treatment. The decorated surfaces are considerably better smoothed than is typical of either Inajá or Camutins Plain.

Form:

Rims: Great variety of shapes, running the gamut from a direct rim with square or rounded lip to various types and degrees of exterior thickening, with a flanged lip being one of the more common.

Body wall thickness: Range 6–26 mm.; thickness above 10 mm. is usually confined to the carination on bowls.

Base: Rounded, flat or annular.

Common vessel shapes:

1. Bowls with outcurving or slightly angular sides and thickened rim. Rim diameter 12–42 cm. (Palmatary, 1950, pls. 56, b, and 68, a). Excision on the exterior (fig. 119–1).

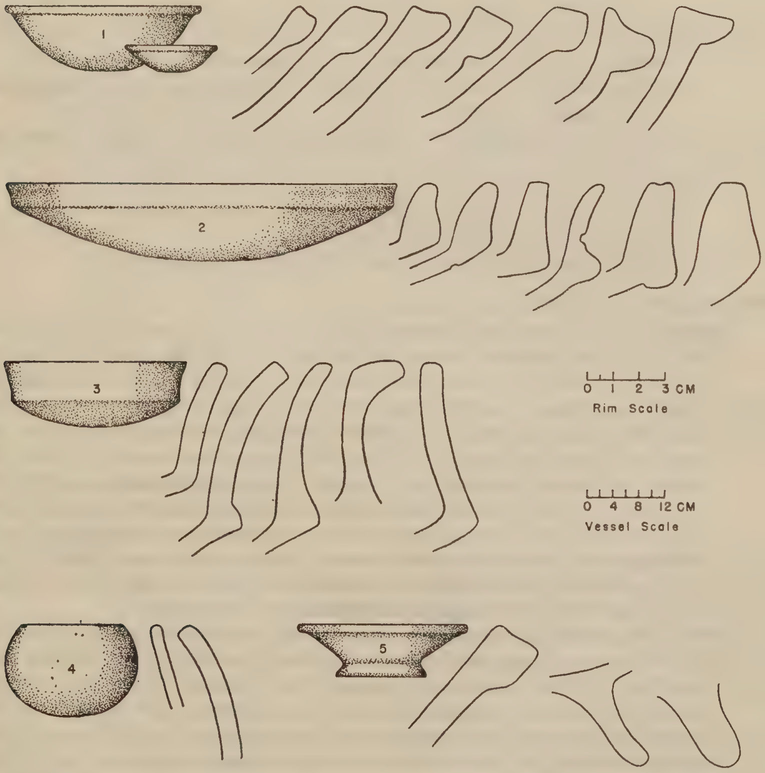


Figure 119.—Rim profiles and vessel shapes of Ararí Plain Excised, Marajoara Phase.

2. Carinated bowls with rounded bottom joining short walls at a sharp angle, produced by marked exterior thickening. The wall is 2.3–3.5 cm. high, straight or slightly convex on the interior, concave to straight on the exterior. The rim top is flat or rounded, 5–8 mm. in width. Rim diameter may be slightly less, equal to or slightly greater than the diameter at the carination. Body wall thickness 6–8 mm.; maximum thickness at carination 1.1–2.6 cm. Rim diameter 24–62 cm. (Palmatary, 1950, pl. 68, b–c). Excision covers exterior (fig. 119–2, pl. 57, *a*).
3. Carinated bowls with rounded bottom joining concave walls at a pronounced angle. Rim direct with square or rounded lip, or everted. Wall height 5.0-8.5 cm.; wall thickness 8–10 mm.; thickness at carination 1.4–1.7 cm.; rim diameter 24–34 cm. (Meggers, 1947, pl. 2, fig. 4). Excision covers the exterior (fig. 119–3).
4. Small, deep bowls with rounded bottom, sides curving inward to a direct rim. Maximum height around 17 cm. (Palmatary, 1950, pls. 5, c, 46). Excision on the exterior (fig. 119–4, pl. 57, *b*).
5. Annular-based, open bowls with outslanting sides and exteriorly thickened rim. Rim diameter 25–33 cm. Excision on the exterior (fig. 119–5).

Rare vessel shapes:

1. "Platter bowls" (See Joanes Painted common shape 8).
2. Flat-bottomed bowls with slightly outsloping sides and direct rim (Palmatary, 1950, pl. 13, d).
3. Globular-bodied jar with short vertical collar (Palmatary, 1950, pl. 41, c).
4. Stools (pl. 83, *b*, *g*).
5. Small, short-necked jars (Palmatary, 1950, pl. 20, d).
6. Figurines (Palmatary, 1950, pl. 4, a–b).
7. Miniature vessels (Palmatary, 1950, pl. 4, f; 5, c–d).

DECORATION (pls. 57, 58):

Technique: Combination of narrow incised lines with excised areas or lines in varying proportions from a few excised lines (Palmatary, 1950, pl. 13, d) to 75 percent of the surface removed by excision. In contrast with Ararí Red Excised, the excisions are typically gouged out, rather than cut back evenly and scored. Margins of excisions range from straight and even to jagged and crooked. Floor of the excision may be deep at the center and sloping upward to the edges, deep and irregular, or relatively level, shallow and scored transversely. Incised lines are fine to 1 mm. wide, straight and even on the better-done specimens, wavering and with overlapping junctions on cruder ones. In rare cases cross hatching may be substituted for excision to produce the contrasting field. Another minor variation is the application of white to the excisions.

Motif: The motifs of Ararí Plain Excised are the same as those on the other excised types, except that they tend to emphasize the less complex combinations. Most common elements include spirals, interlocking spirals, crosses in diamonds, stepped figures, T's, undulating lines, and concentric curvilinear or rectilinear figures. A common combination is a narrow band containing a line undulating between the two margins and having the semicircular areas between the loops filled with T or stepped figures.

ASSOCIATED TECHNIQUES: Occasional bowls with Ararí Plain Excised decoration on the exterior have Joanes Painted designs on the interior.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Although the gouging out of the excised area is always the typical technique of decoration, a comparison of workmanship at Pacoval (American Museum of Natural History Collection) with that at Camutins (J–15, Mound 1) and Guajará (J–14, Mound 1) shows that gouging out becomes increasingly predominant with the passage of time. The relative frequency of the techniques is shown on table M.

TABLE M.—*Temporal differences in Ararí Plain Excised decoration*

Technique of excision	Pacoval		Camutins and Guajará	
	Number	*Percent*	*Number*	*Percent*
Gouged out	30	71.5	46	92
Evenly cut back and scored	11	26.2	3	6
Retouched with white	1	2.3	1	2

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Marajoara Phase with increasing frequency.

ARARÍ RED EXCISED

PASTE: On either Inajá Plain or Camutins Plain; see those type descriptions for details of temper, color, firing, etc.

SURFACE:

Unslipped surface:

Color: Light orange, orange-brown, light brown to light tan.

Treatment: Smoothed; brushmarks, coarse crackle and slight irregularities often remain; occasionally well smoothed with a low luster.

Hardness: 3–4.

Red slip:

Color: Typically cinnabar red to dark red, occasionally fired brownish-rust or blackish.

Treatment: Thin and evenly applied, fine texture, smooth and polished, often with low luster. Smoothing tracks sometimes visible.

Hardness: Typically 3–4. Rare examples attain a hardness of 5.

FORM:

Rim: Direct or everted with rounded, pointed, or flattened lip; exteriorly thickened with a coil added slightly below the rim top giving a flanged effect.

Body wall thickness: 5–10 mm.

Bases: Rounded, flat or annular.

Common vessel shapes:

1. Shallow bowls with rounded bottom and outcurving sides, exteriorly thickened, rounded or flat-topped rim. Circumference is usually circular but occasionally D-shaped. Rim diameter 10–28 cm. A decorative coil with scalloped border is sometimes added around the circumference just below the rim edge (e. g., Palmatary, 1950, pl. 98, e). Small asymmetrically placed rim adornos are also typical. Excision covers the exterior (fig. 118–1).
2. Carinated bowls with rounded bottom joining concave, vertical or slightly outsloping sides at an obtuse angle, less pronounced than that on similar bowls of Ararí Plain Excised because of the absence of exterior thickening at the carination. Upper wall slightly everted and terminating in a direct, rounded or pointed lip. Wall

height 7–12 cm.; rim diameter 24–27 cm. (Palmatary, 1950, pl. 56, a). Excision on the exterior wall, occasionally also covering the bottom of the exterior (fig. 118–2).

3. Small, deep bowls with rounded bottom and outcurving sides, exteriorly thickened, rounded or flat-topped rim. Circumference is usually circular but occasionally D-shaped. Rim diameter 10–28 cm. A decorative coil with scalloped border is sometimes added around the circumference just below the rim edge. Small asymmetrically placed rim adornos are also typical. Excision covers the exterior (fig. 118–3).
4. Flat-bottomed bowls with vertical or slightly outslanting sides, exteriorly thickened rim with rounded lip. Occasionally the rim is direct. Rim diameter 23–30 cm.; wall thickness 8 mm. Thickening on the interior at the junction of the wall and base transforms the otherwise sharp angle to a curve. Excision on exterior of sides (fig. 118–4; Palmatary, 1950, pl. 31, e).
5. Annular-based, open bowls with outslanting sides and exteriorly thickened rim. Rim diameter 25–33 cm. (Palmatary, 1950, pl. 67, b). Excision covers the exterior (fig. 118–5, pl. 60, *a*).
6. Cylindrical or semicylindrical jars with flat bottom and vertical or slightly outslanting walls, everted or exteriorly thickened rim. Height 20–35 cm. (Palmatary, 1950, pl. 30, b). Excision covers the exterior of the walls, frequently beginning 2–4 cm. below the upper rim edge leaving a band with incised and low-relief ornament (fig. 118–6, pl. 60, *b*).
7 Jars with flattened bottoms, rounded body, insloping neck and everted, exteriorly thickened rim. Height 22–30 cm. (Palmatary, 1950, pl. 59, b). Excision is limited to the exterior of the neck, the body being white-slipped and painted (fig. 118-7, pl. 62, *a*).
8. Jars with flat bottoms, globular bodies, short vertical necks and widely everted rims with exterior thickening. Height, about 22–50 cm. (Palmatary, 1950, pl. 60, 61, 63, b). Stylized anthropomorphic faces often occupy two opposite sides of the neck; body exterior covered with complex excision and often adorned with applique saurian motif (fig. 118–8, pls. 61, *a–b*, 62, *b*).

Rare vessel shapes:

1. Anthropomorphic jars with flattened, conical base, sides curving upward and inward and then reexpanding to simulate a head, at the top of which is the everted rim. The expanded area bears a conventionalized anthropomorphic face on one side. No anatomical details are present on the body, which is covered with a complex excised design. This form is typical of Pacoval Incised and is represented in this type by only one vessel whose height is 56 cm. (Palmatary, 1950, pl. 51, d).
2. Jars with flattened bottom, globular or depressed-globular body, cylindrical neck and exteriorly thickened rim. Excision covers the exterior. These are much more common in Ararí Red Excised, White-retouched (Palmatary, 1950, pl. 65, e).
3. Jars with flat conical base, sides sloping outward to maximum diameter about one-third of the distance from the bottom, then inward to just below the everted rim. Excision on the exterior. This form is typical of Pacoval Incised and occurs here exceedingly rarely (Palmatary, 1950, pl. 26, b).

4. Stools. Excision covers the disk top and occasionally the exterior of the base (Palmatary, 1950, pls. 25, c, 83, e, h).
5. Miniature ovoid or teardrop-shaped jars. Height 6.5–8.0 cm.; diameter 5.5–6.0 cm. Excision covers the exterior (Palmatary, 1950, pl. 42, b).
6. Miniature rounded bowls with incurving, direct rim. Depth 5 cm. Excision covers the exterior.
7. Miniature jars with large "wing" adornos rising from opposite sides of the shoulder. Excision covers the exterior of the body (Palmatary, 1950, pl. 43, a).
8. Miniature turtle-effigy vessels, produced by adding stylized head to one side of the body or rim of the small bowl which serves as a carapace. Diameter 8–10 cm.
9. Shallow, oval vessels or spoons with perforated stem issuing from one end. Length, 6–11 cm. (Palmatary, 1950, pl. 42, e). Excision covers the exterior.
10. "Platter-bowls" (Palmatary, 1950, pl. 55, b).
11. Figurines. Excision covers the body (Palmatary 1950, pl. 47, a).

DECORATION (pls. 59–62):

Technique: Broad or narrow incised lines are combined with excised lines and areas in varying proportions of incision to excision on a red-slipped surface. Some vessels have a predominantly incised design with only a trace of excision; from this there is a continuous range to the opposite extreme where 80 percent of the original surface has been removed. The excision cuts through the red slip to expose the underlying orange paste. In contrast with Ararí Plain Excised, the excised areas are typically evenly cut back and scored by brushing them from side to side. Depth varies from only enough to remove the red slip to about 1 mm. Rare sherds have cross hatch in place of excision. The associated incised lines tend to be narrow when the amount of excision is limited or the vessel is small, and wide (1–2 mm.) when the degree of excision is extremely high. Both the lines and the boundaries of the excisions are straight, sharply defined and carefully executed.

Motif: The most frequently employed motif is a stepped figure, which may be used alone as on the walls of carinated bowls, or in combination with undulating lines and other figures. The exteriors of small, shallow bowls are usually divided into halves or quarters, filled with stepped figures or spirals. On larger surfaces these elements may be used in conjunction with undulating lines, ovals or concentric ovals containing a double crossed line, T's, interlocking or squared or rounded spirals, parallel straight lines, and other less-readily described elements. Although the exterior of a large jar may present the effect of symmetry, close examination shows that there is often considerable variation, but the pattern is so skillfully laid out that this is obscured by the balance of the total design.

ASSOCIATED TECHNIQUES: Shallow, open bowls, platter bowls, and annular-based bowls may have Joanes Painted decoration on the interior. Jars of common vessel shape 8, with excision limited to the neck, have Joanes Painted on the exterior of the body. Modeling is common, in the form of geometric, anthropomorphic and zoomorphic rim adornos, and less frequently body adornos. An exceedingly rare combination is with Pacoval Incised, which appears on and just below the rim of cylindrical jars.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Ararí Red Excised shows a decline in the technical skill with which the design is executed, a careless gouging out of the excisions replacing the earlier predominantly careful workmanship. This is readily perceived in a comparison of specimens from Pacoval (American Museum of Natural History collection) with later examples from Camutins (J–15, Mound 1) and Guajará (J–14, Mound 1):

TABLE N.—*Temporal differences in Arari Red Excised decoration*

Technique	Pacoval		Camutins and Guajará	
	Number	*Percent*	*Number*	*Percent*
Evenly cut back and scored	21	77.7	7	38.8
Gouged out	4	14.8	11	61.2
Cross hatched	2	7.5	0	

CHRONOLOGICAL POSITION OF THE TYPE: Maximum popularity in early sites, with a subsequent decline in frequency throughout the Marajoara Phase.

ARARÍ RED EXCISED, WHITE-RETOUCHED

PASTE: Predominantly on Inajá Plain with the remainder on Camutins Plain; see those type descriptions for details of temper, firing, color, etc.

SURFACE:

Unslipped surface:

Color: Light orange to tan to rusty brown to gray brown, with the first two the most frequent.

Treatment: Smoothed, frequently leaving irregularities and smoothing marks; temper grains occasionally protrude.

Hardness: 3–4.

Red slip:

Color: Cinnabar red to dark red.

Treatment: Thin, fine textured, smooth and sometimes polished; smoothing marks rare.

Hardness: 3–4.

FORM:

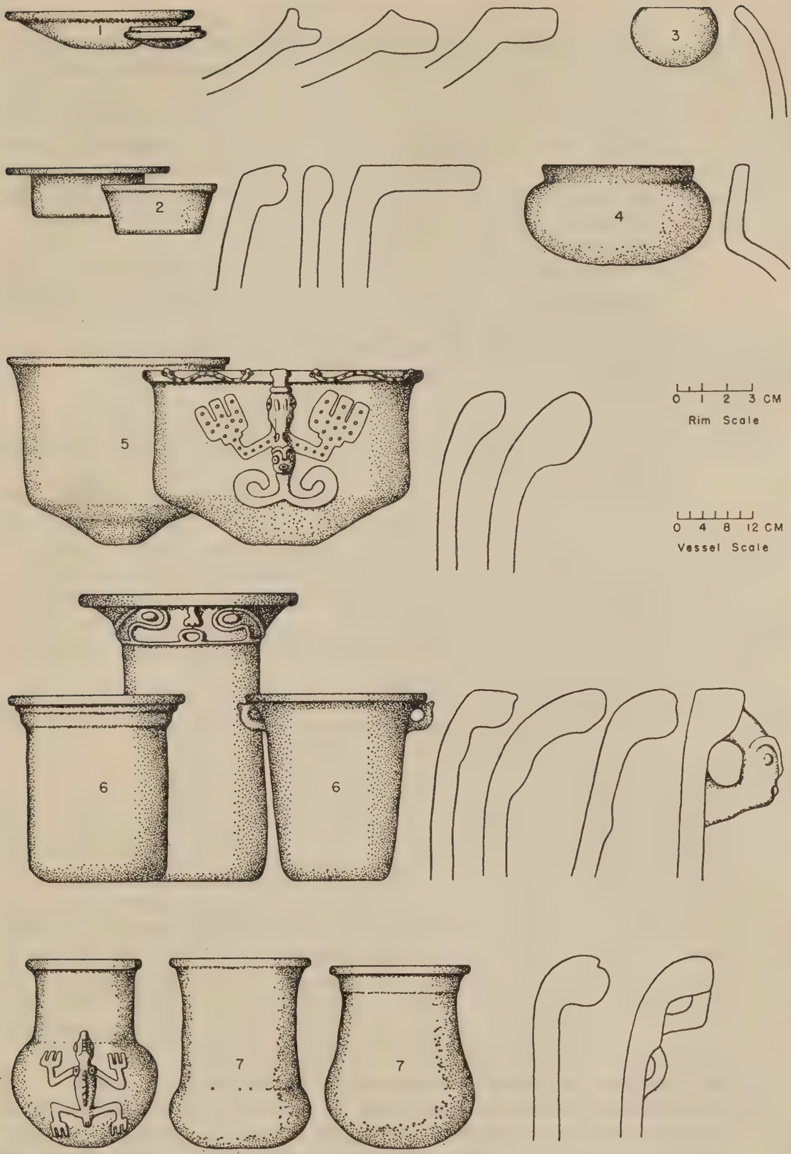
Rim: Exteriorly thickened in a variety of ways; rarely direct.

Body wall thickness: 6–14 mm.

Base: Flat or rounded on bowls, flat on jars.

Common vessel shapes:

1. Shallow bowls, flattened or rounded bottom, outsloping sides and exteriorly thickened rim with rounded lip (Palmatary, 1950, pl. 50, b, 98, b and f). Diameter 10–36 cm. (fig. 120–1).
2. Flat-bottomed bowls with almost vertical or outsloping sides and exteriorly thickened rim with a rounded lip. Sometimes the rim is exaggerated to a broad, horizontal rim. The excision covers the exterior of the sides and occasionally the bottom. Diameter 7–30 cm. (Palmatary, 1950, pl. 48, b). Rim may have adornos (fig. 120–2).
3. Rounded bowls with incurving, direct rim with a rounded lip. Mouth diameter, 10–20 cm. Excision covers the exterior (fig. 120–3).
4. Round-bodied bowls or jars with short collar, direct rim and rounded or flattened lip. Mouth diameter 20–30 cm. (fig. 120–4; Palmatary, 1950, pl. 64).
5. Deep bowls or jars with flattened, conoidal bottom, slightly outslanting sides and exteriorly thickened rim. Height 15–30 cm. (Pal-


1
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0 1 2 3 CM
Rim Scale
0 4 8 12 CM
Vessel Scale

FIGURE 120.—Rim profiles and vessel shapes of Ararí Red Excised, White-retouched, Marajoara Phase.

matary, 1950, pl. 62, b). Excision covers the exterior walls (fig. 120–5).

6. Cylindrical or semicylindrical jars of the same type as common vessel shape 7 of Ararí Red Excised. Height 13–39 cm. (Palmatary,

1950, pls. 44, a–b, 57, b, 58). Two adornos are often attached at the top to opposite sides of the rim and below to the body, making a loop handle, with the outer surface often modeled as an anthropomorphic face (Meggers, 1947, pl. 1, fig. 2). A variant is an exceedingly tall and slender cylindrical jar with a flat bottom and widely everted, exteriorly thickened rim with a height of 37–59 cm. Excision covers the exterior of the body; low-relief, stylized faces are on opposite sides of an expanded area below the rim; relief saurian motif may appear on the body (fig. 120–6; Palmatary, 1950, pls. 49, 57, a).

7. Jars with flat bottom, globular or depressed-globular body, tall cylindrical or insloping neck and exteriorly thickened rim. Height 27–42 cm. Excision covers the exterior, which typically also bears saurian motif (fig. 120–7; Palmatary, 1950, pls. 19, c; 51, a; 53, a; 54, a).

Rare vessel shapes:

1. Carinated jar with rounded or flattened bottom, slightly inslanting walls and everted, exteriorly thickened rim. Height 20–30 cm. (Palmatary, 1950, pl. 63, a).
2. Anthropomorphic jar with flat conoidal bottom, convex sides, horizontal shoulder from which issues a short, everted neck with exteriorly thickened rim. Anthropomorphic face on neck, features in low relief; excision covers the body (Palmatary, 1950, pl. 92, a).
3. Shoe-shaped vessel, flat bottom, ovoid body with mouth and exteriorly thickened rim occupying one end of the top. The "toe" covered with relief modeling; "heel" excised. Height 6 cm. (Palmatary, 1950, pl. 48, d).
4. Jars with flat bottom, tall, conoidal body, rounded shoulder (neck and rim missing) with a body height of 59 cm. Excision covers the exterior (Palmatary, 1950, pl. 23, c).

DECORATION (pl. 63):

Technique: This type is characterized by the combination of incised lines and excised lines and areas in approximately equal proportions on a red-slipped surface, with the excisions evenly cut back to a depth of about 1 mm., scored transversely and covered with a thick, white paint. The bond with the excised surface is usually poor and the white tends to chip off readily. A typical example has the incised lines and excisions straight, even, sharply defined and regularly spaced and the white retouch is carefully applied. On some the white is smeared beyond the excision and onto the adjacent red-slipped surface. Some are so shallowly excised as to leave small patches of red in the excised areas. Incised lines are occasionally crooked, with overshot corners.

Motif: Squared or rounded spirals and ovals are the most frequent, each diversified in a multiplicity of ways; T's, undulating lines, stepped figures, pronged lines, and other geometrical figures are also employed. The two opposite sides of jar bodies often feature a low-relief saurain figure with sprawling legs, the excision filling in around and between them.

ASSOCIATED TECHNIQUES: Joanes Painted on bowl interiors; Pacoval Incised on jar rims (Palmatary, 1950, pl. 39, k); relief modeling on bowl and jar rims and jar bodies; Anajás White Incised on horizontal rim top of bowls.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE: Most frequent at early sites, but present throughout the Marajoara Phase sequence.

ARARÍ WHITE EXCISED

This pottery type appears to be an experimental variety at the sites represented in the analysis. All of the vessel shapes and most of the design elements are more characteristic of Ararí Plain Excised or Ararí Red Excised, except for those decorated in the red-retouch style, in which case the affinity is with shapes and motifs of Pacoval Incised. However, it was set up as a type rather than left unclassified because it represents a unique combination of white slipping with excision and because it may prove to be more popular at some other site in the future.

Paste and unslipped surface: Usually on Inajá Plain, occasionally on Camutins Plain; see those types for details of paste and unslipped surfaces.

Slipped surface:

White slip:

Color: White, sometimes cream to tan from firing differences.

Treatment: Uneroded examples are fine-textured, evenly applied, smooth and have a low luster. Occasional crackle lines. Most commonly applied to the exterior surface.

Hardness: 2–3.

Form:

Rim: Thickened on exterior or interior, rounded or flattened lip.

Body wall thickness: 5–11 mm.

Bases: Rounded on bowls, flat on jars.

Vessel shapes (except for shape 1, these are represented by a single sherd for each shape):

1. Shallow, open bowls with rounded bottom, outflaring sides turning upward at the rim, which is thickened on the interior. Excision is on exterior, beginning at the upper rim edge; low round bosses are a typical component (Meggers, 1947, pl. 2, fig. 1).
2. Bowl with outsloping sides and exteriorly thickened rim. Excision on the exterior beginning below the rim thickening. Diameter 20–30 cm. (Palmatary, 1950, pl. 16, e).
3. Carinated bowl with round bottom and short walls, joined at a sharp angle which is produced by a marked exterior thickening. Wall, 3.2 cm. high, straight on the interior and slightly concave on the exterior. Wall thickness, 8 mm. at the flat rim top and body wall 18 mm. thick at the carination. (Cf. common vessel shape 2 of Ararí Plain Excised.)
4. Bowl with flat bottom and vertical sides. Excision covers the exterior (Palmatary, 1950, pl. 37, h).
5. Cylindrical jar with flat bottom, anthropomorphic adorno below the rim.

Decoration:

Technique: White-slipped surface ornamented with a combination of incised and excised lines or areas, used intermingled or to cover alternating panels. Excision is typically shallow, but generally removes the white slip and reveals the orange paste. It may be or may not be scored. In rare cases the scoring is done without prior excision. Incised lines are fine to 2 mm. in width.

Motif: Spirals, ovals, parallel alternating excised and incised lines are most common. Motifs and combinations are less complex than Ararí Red Excised and more comparable to Ararí Plain Excised. Many of the designs are those of Pacoval Incised, in which excision has replaced red-retouching to produce a contrast with the white slip.

ASSOCIATED TECHNIQUES: Occasional adornos.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Pacoval is the only site where this type has any motif which can be called characteristically its own, although even here more than 40 percent of the designs are in the Pacoval Incised style, in which small triangles and squares at the junctions of the lines have been excised instead of colored red, with the cross inside a diamond the most common motif. At Fortaleza, Ararí White Excised declines in frequency and the majority of the examples are in the Pacoval Incised style:

TABLE O.—*Temporal differences in Ararí White Excised decoration*

Design	Pacoval	Fortaleza	Camutins and Guajara
Regular excised style	20	1	0
Pacoval incised style	15	5	0

CHRONOLOGICAL POSITION OF THE TYPE: Ararí White Excised is most frequent in the early part of the sequence and is absent at the end of the Marajoara Phase.

CAMUTINS PLAIN

PASTE:

Method of manufacture: Coiling; coils 2–3 cm. wide visible on some large jars with incompletely smoothed surfaces.

Temper: Ground sherd, with many particles quite large, ranging 1–5 mm.

Texture: Very porous, with temper poorly mixed; temper particles easily rubbed out of matrix on a fresh break. Very irregular and angular cleavage due to coarse temper; easy to break and very crumbly. Dull, heavy thud when dropped together.

Color: Uniformly orange or reddish-orange.

Firing: Completely oxidized; weakness of ware in part the result of "burnt-out" condition.

SURFACE:

Color: Typically a bright, tile orange; both surfaces may range from light orange to brilliant orange to reddish orange. Interiors of a few sherds have a light-grayish hue.

Treatment: Exterior typically left rough and coarse textured, with wide finger-smoothing marks parallel to the rim. Numerous pits and protruding temper grains contribute to the general unevenness and grittiness of the surface. Interior of bowls was often slipped with a thick layer of the same clay as the paste after the surface had been scraped or smoothed. Interiors of these sherds are sometimes slick and all are smoothed, though a few remain somewhat uneven. Crackle common on the interior and sometimes occurs on the exterior.

Hardness: 2–3.

FORM:

Rims: Typically everted and exteriorly thickened, with one common form of bowl having a direct or slightly interiorly thickened rim with a rounded lip. Some rims have geometric, anthropomorphic or zoomorphic adornos or are ornamented by nubbins, scalloped lips, appliques with incisions in the form of crosses and nicks (pls. 64, 65).

Body wall thickness: Large vessels range 10–25 mm. with the majority 15 mm.; smaller vessels range 4–10 mm., majority 6–7 mm.

Bases: Majority flattened in one of two ways: (1) Flat base, sometimes thickened slightly, with the side walls attached at a prominent 45-degree angle (this type is the most common variety), and (2) thickened (1–3 cm.) base rising vertically 1–2 cm. on the exterior before joining the body wall, producing a slight pedestal. Diameters of both varieties range 10–20 cm., with the majority 12–14 cm. A few bases are rounded, and those of stools, pot stands and "platter-bowls" are annular.

Common vessel shapes:

1. Large, deep bowls with flat bottom, outcurving and upcurving sides, ending in a direct, vertical or slightly incurving rim. Maximum diameter 24–26 cm.; mouth diameter 24–32 cm. with the majority 30 cm.; depth 12–16 cm. Majority of sherds from J–15 habitation mounds are of this type (fig. 121–1).
2. Deep, basinlike carinated bowls with small flat bottom, sides outsloping to carination, then more vertical to everted, exteriorly thickened rim. Junction varies from pronounced carination to barely perceptible change in direction. Rim diameter 30–70 cm.; total depth 15–30 cm.; upper wall height 8–20 cm.; base diameter 8–17 cm. (fig. 121–2; pl. 67, *c*; Palmatary, 1950, pl. 9, b–d).
3. Bowls with rounded body, outcurving sides, and exteriorly thickened rim; bottom is typically rounded and occasionally flat. Rim diameter 16–40 cm. (fig. 121–3).
4. Flat-bottomed bowls with outslanting sides, everted or exteriorly thickened rim. The rim is frequently ornamented with three large, heavy (usually solid), equally spaced, anthropomorphic, zoomorphic or geometric adornos (Palmatary, 1950, pl. 7, a and c; pl. 102, a–b, d–e; and Meggers, 1947, pl. 3, fig. 1–3). Depth of bowl 4–9 cm.; exterior rim diameter usually 16–25 cm., rarely 30–44 cm. Height of adornos 5–11 cm (fig. 121–4; pls. 68, 69).
5. Carinated jars with flattened, conoidal base, vertical or slightly insloping sides and slightly everted, exteriorly thickened rim. Height, 24–43 cm.; rim diameter 20–34 cm. (fig. 122–5; Palmatary, 1950, pls. 10, c–d, 11, a–b). Sometimes with applique spiral (op. cit., pl. 12 g, and i).
6. Jars with rounded body, flat bottom and everted, slightly thickened rim, square or rounded lip. Rim diameter 16–36 cm. (fig. 122–6).
7. Small jars with flat bottom, rounded body merging into insloping neck, everted rim. Mouth diameter 13–24 cm. (Meggers, 1947, pl. 1, fig. 1). Occasional vertical handles (fig. 122–7).
8. Large jars with rounded bottom or small flat, pedestal base, walls curving outward to maximum diameter about one-third the distance from the base then sloping inward to join the everted, exteriorly thickened rim. Height 80–90 cm.; rim diameter 54–76 cm. (fig. 122–8).
9. Large jars with small, flat bottom, sides outcurving to a maximum diameter of 70 cm. about one-third the distance above the base, then slightly inward, joining a short, vertical neck at the rounded shoulder. The rim is everted and exteriorly thickened. The body height 62–64 cm.; neck height about 15 cm.; rim diameter 32–54 cm. (fig. 122–9).

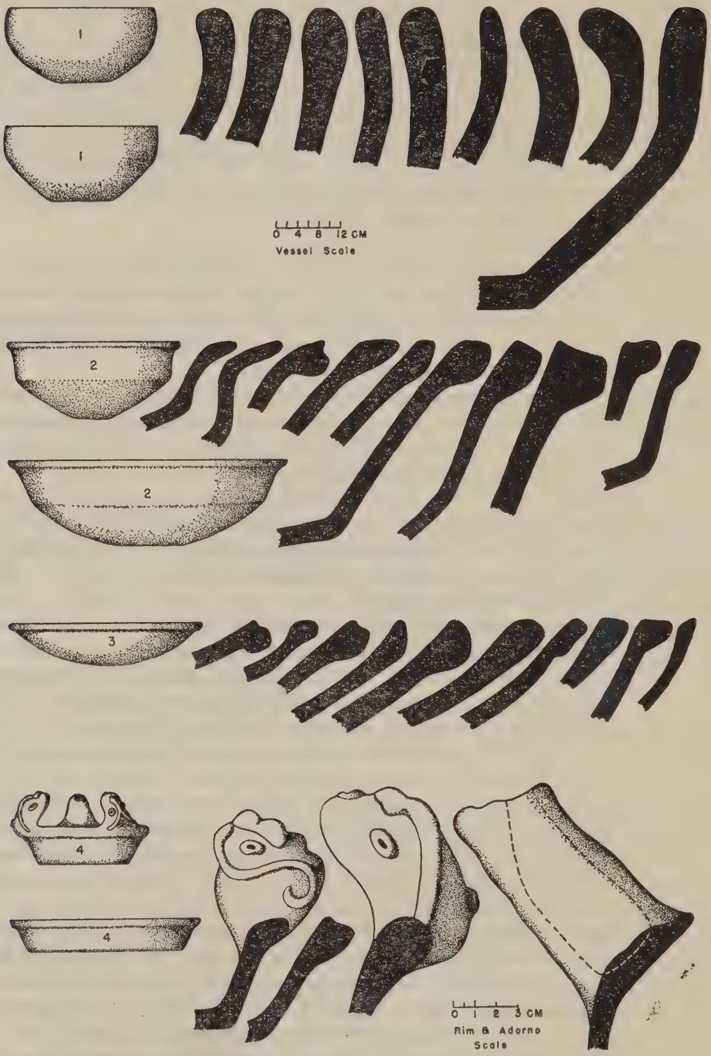


FIGURE 121.—Rim profiles and vessel shapes of Camutins Plain and Inajá Plain bowls, Marajoara Phase (Appendix, tables 45 and 46).

Less common forms:

1. Narrow-necked jars with flat, conoidal base, globular body and slightly everted, exteriorly thickened rim. Height 34–39 cm.; rim diameter 10–14 cm. (fig. 123–1; Palmatary, 1950, pl. 11, c, 12, d).
2. Jars with flattened bottom, sides sloping outward to maximum diameter, then inward to constricted mouth with a collarlike, exteriorly thickened rim. Two small loop handles often occupy opposite

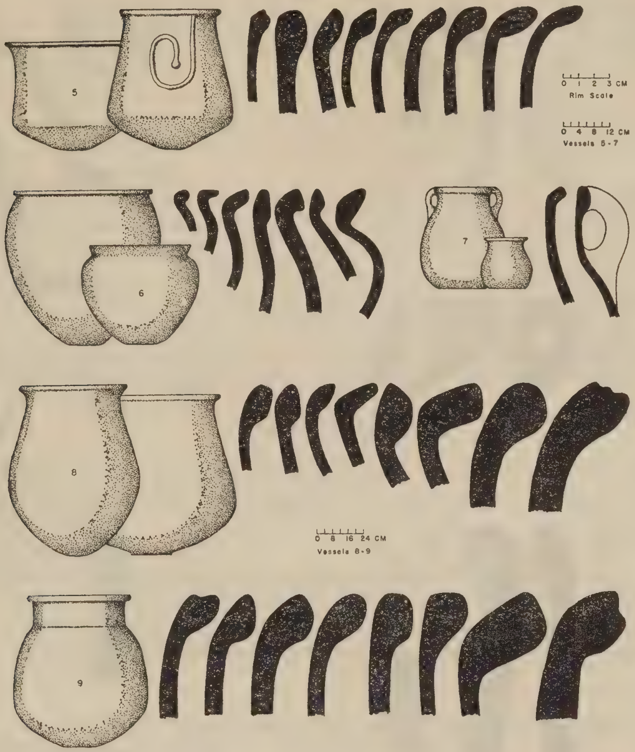
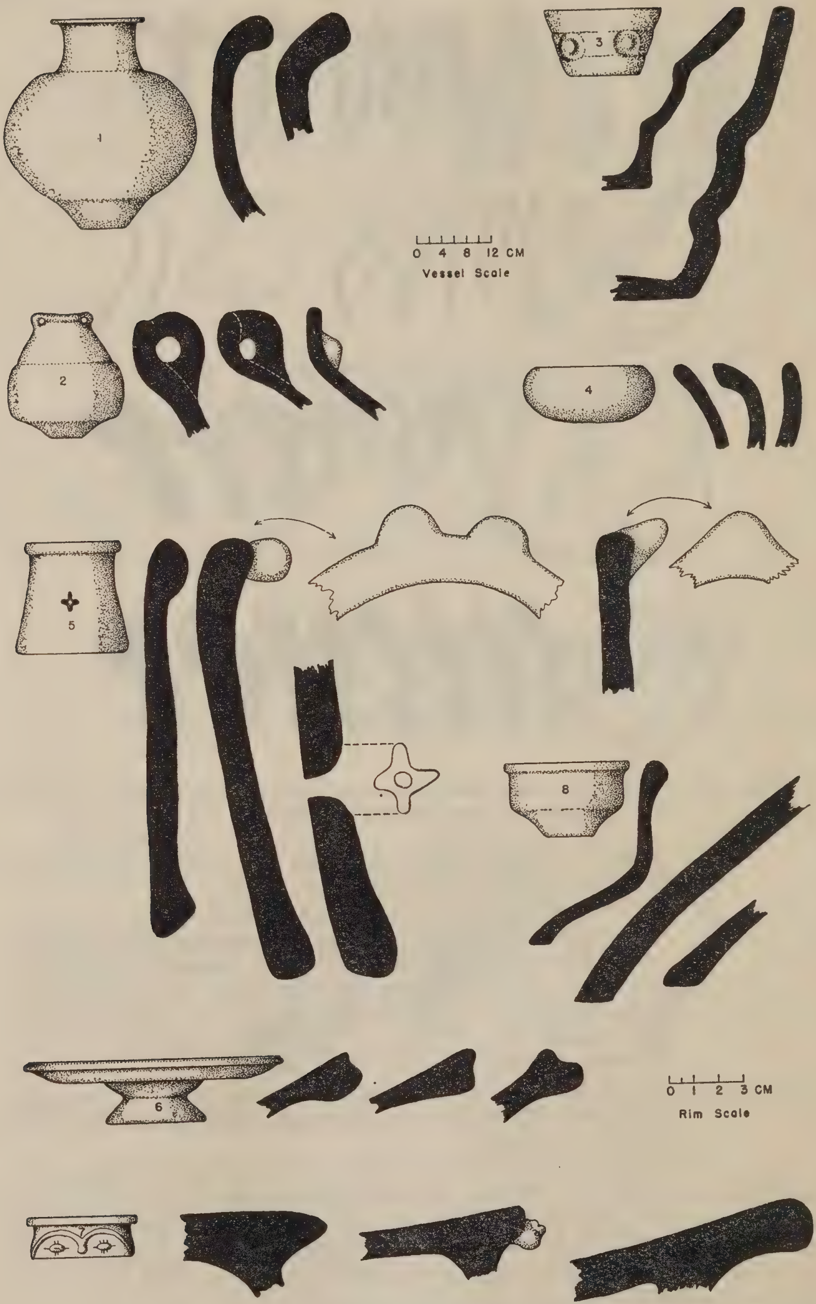


FIGURE 122.—Rim profiles and vessel shapes of Camutins Plain and Inajá Plain jars, Marajoara Phase (Appendix, tables 45 and 46).

sides of the rim. Height, 10–20 cm.; diameter of orifice 1.7–4.0 cm. (fig. 123–2; Palmatary, 1950, pl. 11, e).

3. Flat-bottomed bowls with outslanting sides, direct rim and flat lip. Interior smooth, exterior with two coil lines, indicating construction with three wide, flat coils. Four, approximately equally spaced, ringlike depressions on the exterior with corresponding projections on the interior along the middle coil. Height 7.5–12.0 cm.; rim diameter 10–22 cm.; diameter of depressions 4.5–6.0 cm.; depression depth 0.5–1.0 cm. (fig. 123–3).
4. Bowls with flat bottom merging into rounded sides and incurving, direct rim with rounded or flattened lip. Rim diameter 10–17 cm. (fig. 123–4, pl. 66, *c*).
5. Cylindrical pot stands with insloping sides and everted rim, open at the bottom and top. Height 15–20 cm.; diameter at the top 8–16 cm. (Palmatary, 1950, pl. 8, a). Sometimes ornamented with small rim adornos or geometric wall perforations (fig. 123–5).
6. "Platter-bowls" (cf. Joanes Painted, common vessel shape 8, fig. 123–6).
7. Stools (fig. 123–7; Palmatary, 1950, pl. 25, d).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0 4 8 12 CM
Vessel Scale
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8
6
0 1 2 3 CM
Rim Scale
7

FIGURE 123.—Less common rim profiles and vessel shapes of Camutins Plain and Inajá Plain, Marajoara Phase.

8. Funnels. Small, carinated bowls with an open bottom, rounded lip at bottom and top. Diameter of bottom opening 5–10 cm. Maximum body diameter, 13–34 cm. (fig. 123–8).
9. Figurines.
10. Miniature bowls.
11. Spoons. Miniature, circular or oval bowls with perforated projection at one end. Maximum diameter 3.2–6.5 cm.; depth 2–4 cm. (pl. 81).

Appendages: Nubbins or small appliques may be placed on the body wall or on rims. Handles in the form of loops, oval or round in cross section, with one end attached to the rim and the other to the shoulder are found on small jars. Points of attachment are widened out but well tapered and graceful. Length ranges from small loops 3–5 cm. long up to 8–10 cm.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None (Appendix, table 45).

CHRONOLOGICAL POSITION OF THE TYPE: Replaces Inajá Plain as the dominant plain pottery type in the latter part of the Marajoara Phase sequence.

CARMELO RED

PASTE AND UNSLIPPED SURFACE: On Inajá Plain or Camutins Plain; see those type descriptions for details of temper, color, firing and the unslipped surface.

SLIPPED SURFACE:

Red Slip:

Color: Cinnabar red to deep red, occasionally orange red.

Treatment: Thin, often closer to a wash than a slip and reflecting the contour of the underlying surface, which is smooth and even on bowl interiors and irregular on the exterior of vertical-walled vessels.

Hardness: 3.

FORM:

Rim: Exteriorly thickened, direct, or broad, nearly horizontal and flat-topped with rounded lip.

Body wall thickness: 5–13 mm.

Bases: Probably flat.

Vessel shapes:

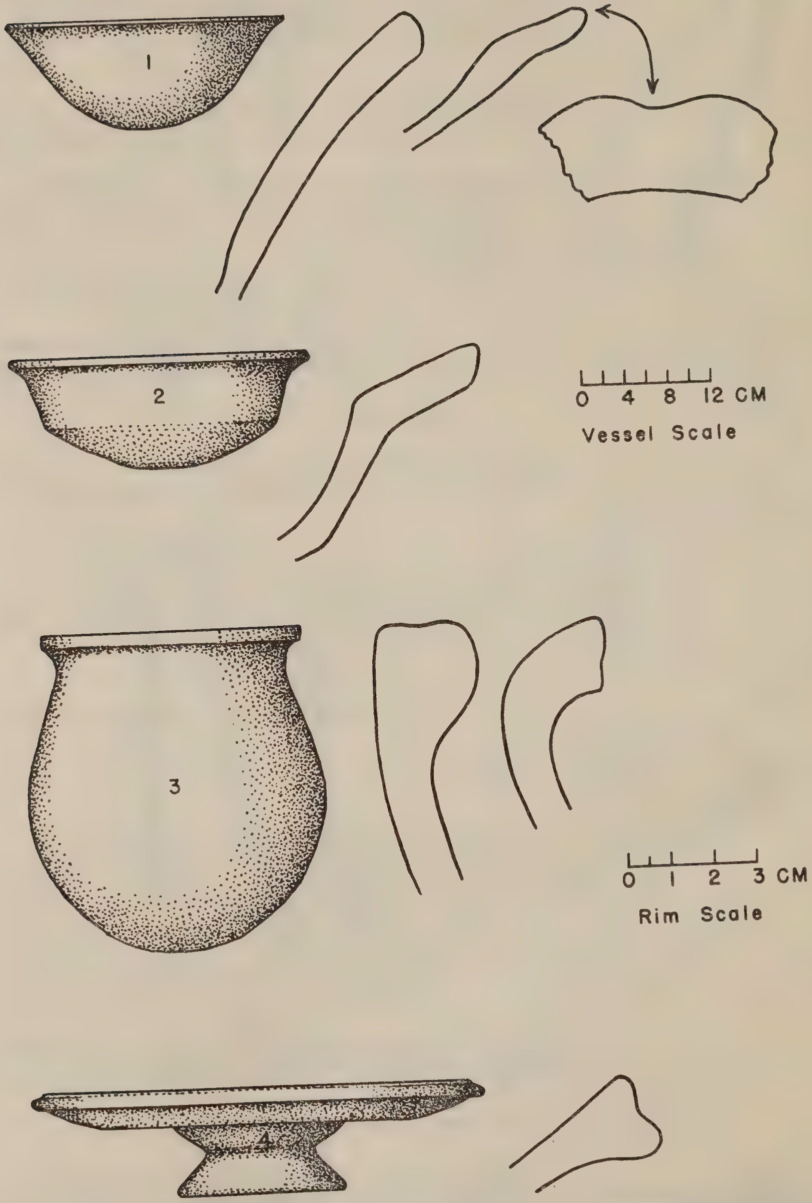
1. Large bowls with outflaring sides, often slightly thickened on the interior for several centimeters below the rim, rounded and level or undulating lip. Rim diameter 20–32 cm. Interior and rim top red slipped (fig. 124–1).
2. Bowls with mildly carinated walls and broad, everted rim with sloping top and flattened lip. Exterior rim diameter, 22–29 cm;. width of rim top 3.5 cm. Red slipped on the interior or exterior or both (fig. 124–2).
3. Jars with insloping upper wall and everted or exteriorly thickened rim (based on rim sherds only). Rim diameter 22–40 cm.; red slipped on top and exterior (fig. 124–3).
4. "Platter-bowls" (see common vessel shape 8 of Joanes Painted).
5. Tangas (pl. 82, *d*, *e*).

DECORATION: Red coloring, applied to one or more surfaces, is the only ornamentation except for an occasional undulating rim edge or applique rib.

ASSOCIATED TECHNIQUES: None.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE: Carmelo Red shows a slight increase in frequency during the Marajoara Phase sequence.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Vessel Scale
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0 1 2 3 CM
Rim Scale
4

FIGURE 124.—Rim profiles and vessel shapes of Carmelo Red, Marajoara Phase.

GOIAPÍ SCRAPED

Paste and surface: On Inajá and Camutins Plain; at J–15—Camutins scraping is used predominantly on Camutins Plain, but usually of better quality than the general run of that plain ware, while about 40 percent are on Inajá Plain. See those type descriptions for details of temper, firing, color, undecorated surface, etc.

Form:

Rim: All jar rims are everted and thickened on the exterior, with a rounded or flattened lip. The thickening may be gradual, forming a uniform curve, or abrupt and angular. One bowl rim is unthickened and flattened on the top.

Body wall thickness: Range 4–7 mm.; majority 4–5 mm.

Bases: One complete specimen from Fortaleza (University Museum, Pennsylvania, SA1870) has a small flat bottom. Since the typical shape is similar to jars of Guajará Incised, the bases were probably within the range of rounded or slightly flattened represented in that type.

Vessel shape:

1. About 90 percent of the rim sherds represent a form that has a continuous variation, produced principally by widening of the neck, between a globular-bodied jar with a short, vertical neck and a slightly everted, exteriorly thickened rim and a deep bowl with a flattened bottom, sides that curve or slant outward to the maximum body diameter and then constrict slightly below the everted rim (fig. 125–1; Palmatary, 1950, pl. 9, a). At the jar end of the range, the exterior rim diameter is 18–20 cm. and at the bowl end, 30 cm. or more. Scraping is typically confined to a band immediately below the rim, corresponding to the neck.
2. Only 2 rim sherds were from bowls, one rounded and the other with a slightly everted rim. Diameter 15 and 24 cm. (fig. 125–2).

Decoration (pl. 70):

Technique: There was a wide variation in the tools used to produce the parallel striations classified here as "scraping", so that there is pronounced lack of uniformity from one example to another in the width and clarity

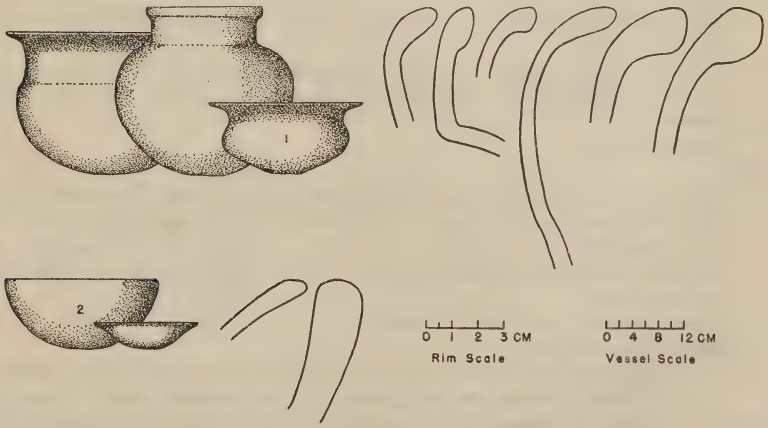

Figure 125.—Rim profiles and vessel shapes of Goiapí Scraped, Marajoara Phase.

of the marks. This type does not include those Camutins Plain and Inajá Plain bowls that have broad horizontal smoothing marks on the exterior, but is confined to those instances where scraping was applied as decoration after the smoothing was completed. The marks are of two major varieties: (1) Shallow lines made with a tool that left faint, fine striations in the groove, which ranges from 2.5–5.0 mm. in width but has small variation on a single specimen; and (2) sharply defined grooves, 1–4 mm. wide and lacking the striations in the trough. The tool used to make the lines was usually single-edged, each line made separately. This results in nonuniformity not only in spacing but also in the width of the lines, which vary with the angle of the tool to the surface. In some specimens the lines are so uniformly parallel and so close together that a comblike tool must have been used, making several lines simultaneously. The surface of the trough of the scrapings varies from even and slick to rough because of the temper particles dragged out and left adhering to the surface.

Motif: The predominant and almost exclusive use of scraping was to ornament the neck of otherwise plain vessels. The lines were made by dragging the tool vertically beginning just below the rim and stopping at the junction with the body or, where this is not pronounced, above the region of maximum diameter. In some instances, this scraped band has the lines running horizontally, in which case additional scraping is often applied to the body, running diagonally or nearly perpendicularly to that on the neck.

ASSOCIATED TECHNIQUES: This type of scraping appears on the necks of some jars with Anajás Plain Incised or Guajará Incised decoration on the bodies (Palmatary, 1950, pl. 32, d and e).

TEMPORAL DIFFERENCES WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Marajoara Phase sequence in increasing frequency.

GUAJARÁ INCISED

PASTE: Typically on Camutins Plain, occasional examples from lower levels of the sequence on Inajá Plain; see those type descriptions for details of temper, firing and color.

SURFACE:

Color: Tan, light-orange or red-orange, often with blackened, fire-clouded areas.

Treatment: Both surfaces often well smoothed, particularly on smaller vessels; in other cases the decorated surface is smoothed but may remain somewhat uneven.

Hardness: 2.5–3.

FORM:

Rim: Typically outflaring and exteriorly thickened with rounded, blunt-pointed or angular lip. Some bowls have direct or expanding, rounded or flat-topped rim.

Body wall thickness: Typically 6–9 mm. Rare small vessels have walls 3.5–4.0 mm. thick.

Bases: Rounded or slightly flattened.

Common vessel shapes:

1. Small jars with bases flattened sufficiently to prevent tipping, globular bodies, vertical or insloping necks and everted rims. There are two size ranges: maximum body diameter 6–11 cm. and 20–45 cm. The height of the smaller group is 6.5–8.5 cm.; that of the larger

is not exactly determinable because of the lack of complete specimens. The larger jars have an exterior rim diameter of 20–30 cm. Decoration may cover the body or be limited to a band extending one-half to two-thirds of the distance below the junction of neck and body. The neck is almost invariably ornamented with contiguous vertical (rarely horizontal) incised lines or scrapings (fig. 126–1, pl. 71, *i*).

2. Small bowls with rounded body, slightly constricted mouth and everted rim. Body diameter is 6.7–11.0 cm. (Palmatary, 1950, pl. 4, e). Incision on the exterior (fig. 126–2, pl. 71, *h, j*).

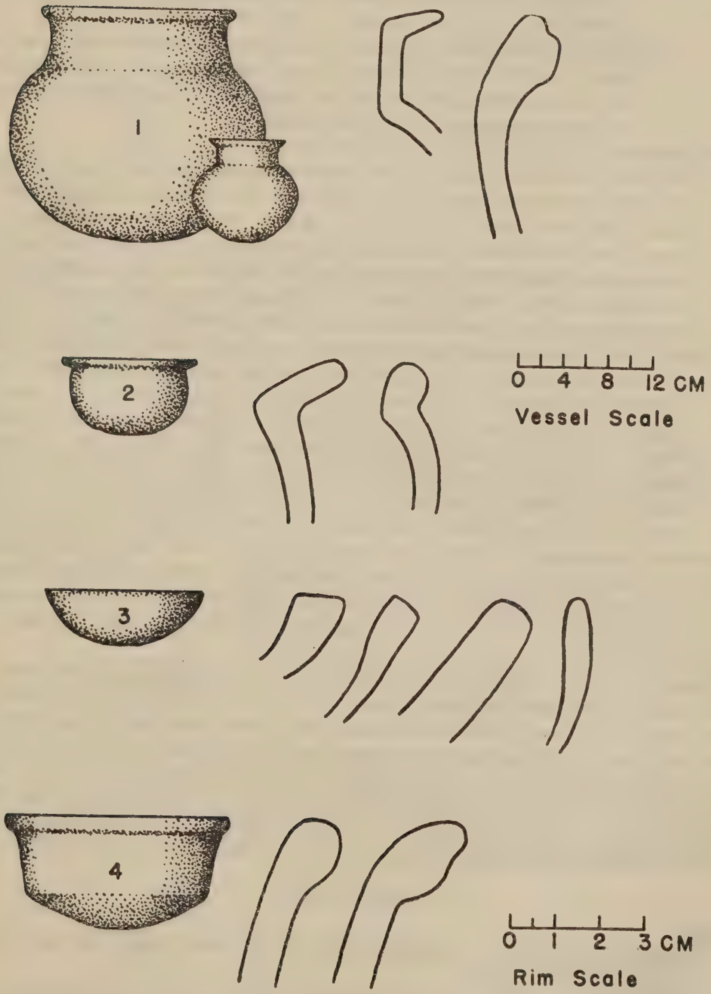

Figure 126.—Rim profiles and vessel shapes of Guajará Incised, Marajoara Phase.

3. Shallow bowls with upcurving sides increasing in thickness toward the direct rim with rounded or flat lip. Rim diameter 12–16 cm. Decoration covers the exterior (fig. 126–3).
4. Carinated bowls, with the rounded bottom joining almost vertical sides at a rounded angle. The rim is slightly everted and exteriorly thickened with a rounded lip. Rim diameter is 20–26 cm. The decoration is limited to exterior of vertical wall (fig. 126–4).
5. Stools. Concave disk top 22 cm. in diameter; stool height 5 cm. Decoration covers the disk top.

Rare vessel shapes:

1. A jar in the form of two superimposed jars, one small jar resting in the mouth of another of similar shape but slightly larger (Palmatary, 1950, pl. 11, d). Decoration covers the exterior.
2. Miniature oval-bodied vessel with a short, constricted oval neck and everted rim. Ends flattened, with nubbin projecting from center of each. Length 10 cm., height 6.3 cm. Exterior decorated with undulating, triple incised lines.

DECORATION (pl. 71):

Technique: The design is drawn with a double-pointed tool, which produces two evenly-parallel lines; a rare variation has a triple line. Within the type these vary from 0.5–2.0 mm. apart, representing variation in the dimensions of the tool point. On a single example, done with a single tool, the spacing is uniform. Incisions shallow, 0.5 mm or less in depth; width generally 1 mm., rarely 2 mm. The double lines are usually straight, although a series of double lines is not always evenly spaced.

Motif: The most outstanding characteristic of these designs is their repetition; a simple combination of straight and curved lines will form a continuous pattern over the entire decorated surface. A typical example is based on diagonally drawn lines producing a band of diamonds with their interiors filled by one long and two short lines drawn vertically and on triangles filled with similar lines drawn horizontally. One of the most frequent motifs is the scallop, used as the upper border, just below the neck, or as the basis for the whole design, dividing it into semicircular and angular fields.

ASSOCIATED TECHNIQUES: Additional ornamentation may appear on Guajará Incised vessels in the form of vertical applique ribs on the body, small nubbins on the exterior rim edge, and scraping on the neck exterior. Of these, scraping is by far the most common and the applique ribs rare and early, perhaps confined to Pacoval.

TEMPORAL DIFFERENCES WITHIN THE TYPE: The most important temporal distinctions are in vessel size and in the application of the design. The later jars are considerably larger than the earlier ones, and more equal spacing of the parallel lines and a closer and more consistent approximation to true parallelism are characteristic of the earlier designs. The small jars are more typical of Pacoval and Fortaleza, while the larger variety are more common from Camutins.

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Marajoara Phase with an increase in popularity from the early to late part of the sequence.

INAJÁ PLAIN

PASTE:

Method of manufacture: Coiling, coils 2–5 cm. wide, visible on some large, poorly smoothed jars.

Temper: Ground sherd, very angular and often coarse, particles attaining 5 mm. in diameter.

Texture: Very porous with temper poorly distributed. Poor mixture makes a granular, irregular cleavage plane. Tensile strength better than Camutins Plain. Sherds have a metallic ring when dropped together.

Color: Cross section always has some gray core, ranging from a thin line, 1–2 mm. wide, to 90 percent of the total cross section. Steel gray the most typical color. Type set up as distinct from Camutins Plain on the basis of this difference in core color.

Firing: Incompletely oxidized.

SURFACE:

Color: Exterior and Interior—Range from a light orange to dull tan to grayish tan to grayish orange to grayish red-orange. Majority of sherds have a grayish hue.

Treatment: All details of surface porosity, water bubbles, and texture indicate the pottery was handled when extremely wet. Crackle lines begin around the prominent temper particles and although found on both surfaces are more common on the interior. Exterior rough, coarse and irregular with finger tracks visible on over 50 percent of the sherds. Interior of bowls floated or slipped with same clay as paste and smoothed, generally leaving smoothing tracks.

Hardness: 3–3.5.

FORM: All vessel shapes, rims, bases, appendages, dimensions, etc. are identical to Camutins Plain. See that type for profiles, vessel shapes, and descriptive details (also figs. 121–123; pls. 64; 65; 66, *a*, *b*, *d;* 67, *b;* 68, 69).

TEMPORAL DIFFERENCES WITHIN THE TYPE: None (Appendix, table 46).

CHRONOLOGICAL POSITION OF THE TYPE: This is the dominant plain ware in the early Marajoara Phase and declines in frequency as Camutins Plain increases.

JOANES PAINTED

PASTE AND UNSLIPPED SURFACES: Details of temper, firing, color, surface treatment of the unslipped surfaces correspond to Inajá Plain and Camutins Plain; see those types for descriptive details.

SLIPPED SURFACE:

White slip:

Color: Typically white; firing variations include cream, light orange, light tan and bluish white.

Treatment: On bowl interiors, typically smooth, even and polished, often producing a slight luster. Somewhat unevenly applied on jar exteriors. Ranges from a thin film to 1 mm. in thickness.

Hardness: 3–4.

FORM:

Rim: Predominantly exteriorly thickened or direct; interiorly thickened on some shallow bowls; hollow on some bowls with Pacoval Incised or Anajás White Incised exteriors.

Body wall thickness: Range from 4 mm. on miniature bowls to 17 mm. on the bodies of large jars

Bases: Flat, rounded, annular or annular pedestal.

Common vessel shapes:

1. Shallow, open bowls with rounded bottom, outcurving sides, exteriorly thickened rim. A thickened coil often added 1 cm. below the lip gives a flanged effect. Rim diameter 8–38 cm. Circumference may be circular (typical), ovoid or D-shaped. Those decorated with Pacoval Incised or Anajás White Incised on ex-

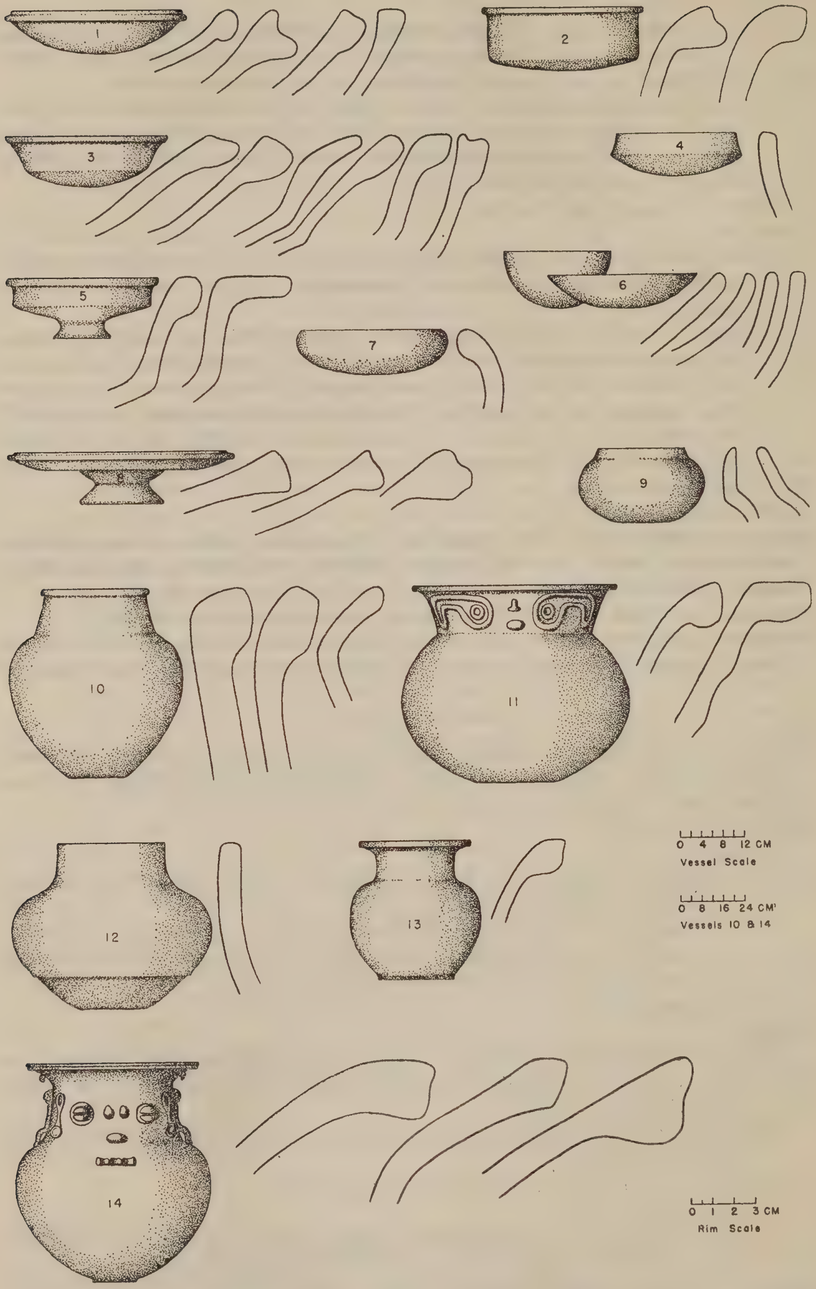
1
2
3
4
5
6
7
8
9
10
11
12
13
14
0 4 8 12 CM
Vessel Scale
0 8 16 24 CM
Vessels 10 & 14
0 1 2 3 CM
Rim Scale

FIGURE 127.—Rim profiles and vessel shapes of Joanes Painted, Marajoara Phase (Appendix, table 47).

terior may have hollow rims. Painting covers the interior (fig. 127–1).

2. Bowls with slightly rounded bottom, nearly vertical sides and exteriorly thickened or everted rim with a flat lip. Diameter 15–30 cm. (Palmatary, 1950, pl. 15, b; 71, d; 72, a). Painting on the interior or exterior (fig. 127–2).
3. Bowls with rounded or flattened bottom, angular profile and exteriorly thickened rim with flat or rounded lip. In a few the rim is slightly everted rather than thickened. Diameter typically 26–34 cm., occasionally 38–52 cm. (Palmatary, 1950, pl. 72, b-c; 78, b). Painting on interior or exterior (fig. 127–3).
4. Carinated bowls with flat or rounded bottom, lower sides outcurving or outslanting to join upper, vertical or insloping walls at marked carination; direct rim with flat or rounded lip. Upper wall comprises one-half to two-thirds of the total height. Diameter 16–24 cm. (Palmatary, 1950, pl. 76, d and f; 77, a and c). Painting on interior and upper exterior (fig. 127–4).
5. Carinated, sometimes rounded, bowls with tall, annular, pedestal base, vertical to outslanting upper wall, everted or exteriorly thickened rim with rounded or flat lip. Mouth diameter 16–30 cm. (Palmatary, 1950, pl. 76, b-c; 79, a-b). Interior painted; exterior plain or painted (fig. 127–5).
6. Rounded bowls with outcurving to nearly vertical sides, direct rim with flat or rounded lip. Diameter, 10–38 cm. (Palmatary, 1950, pl. 32, b; 69, f-g; 82, e). Exterior and interior painted (fig. 127–6).
7. Bowls with rounded bottom, sides incurving to direct or slightly interiorly thickened rim with a rounded lip. Diameter 10–30 cm. (Palmatary, 1950, pl. 69, g; 71, e). Exterior and interior painted (fig. 127–7).
8. "Platter-bowls" with flaring annular base, deep bowllike center inserted into the middle of a broad platter, producing a wide, troughlike, lateral extension terminating in an exteriorly thickened, often flanged, rim. Circumference circular or squared. Rim diameter, 25–45 cm.; central bowl diameter 5–16 cm. (approximately one-fourth to one-third of the total diameter). (Palmatary, 1950, pl. 80 a-d, 81 a.) Interior painted. These vessels were used as burial-urn covers at Pacoval and Ilha dos Bichos (fig. 127–8).
9. Small jars with flattened bottom, rounded body and short, vertical, direct rim with a rounded lip. Height 6–15 cm. (Palmatary, 1950, pl. 73, a-b). Exterior painted (fig. 127–9, pl. 67, *a*).
10. Jars with flat bottom, rounded body, pronounced shoulder, insloping neck and everted or exteriorly thickened rim. Height 20–80 cm. (Palmatary, 1950, pl. 82 a-b, 83 a, 84 b, 97 a). Painting covers the exterior (fig. 127–10, pl. 73, *a*, *c*).
11. Jars with flat bottom, globular body, pronounced shoulder, outsloping neck and everted, exteriorly thickened rim. Height 30–40 cm. (Palmatary, 1950, pl. 86, a-b; 87, a). A rare variation has a carinated body (op. cit., pl. 78, a). Low relief, paired eye motifs on opposite side of neck are typical. Painting covers exterior (fig. 127–11, pl. 73, *b*).
12. Jars with flat bottom, outsloping sides, rounded shoulder, short vertical neck, and direct rim. Height 22–32 cm. (Palmatary, 1950, pl. 77, b). Painting on exterior, lower limit marked by

slight ridge around the exterior about one-quarter the distance above the base (fig. 127–12).

13. Jars with flat bottom, upcurving sides, rounded shoulder, short vertical neck and everted, exteriorly thickened rim. Height 22–28 cm. (Palmatary, 1950, pl. 85, a). Painting covers the exterior, sometimes absent on the neck (fig. 127–13, pls. 73, *d*, 75, *a*).
14. Funerary jars with small, flat base, globular to ovoid body, rounded shoulder, vertical or insloping neck and widely everted, exteriorly thickened rim. Height 30–95 cm. (Palmatary, 1950, pls. 88, 89, 93, 94, 95). A rare variation has a flat, horizontal shoulder. Painting covers the exterior. Stylized anthropomorphic faces modeled on two opposite sides of neck; small, grotesque or anthropomorphic figures in the round between the ears (pl. 74, *a-b*); body painting typically includes stylized arms, hands and fingers (fig. 127–14; pls. 75, *b*, 76, *a-b*).
15. Anthropomorphic figurines. Height 6–24 cm. (pl. 79, *a-c*, *e*; Palmatary, 1950, pls. 47, b-c; 100, b-d; 101, a-d).
16. Tangas (pl. 82, *a-b;* Palmatary, 1950, pls. 102, f-k, 103, 104).

Rare vessel shapes:

1. Carinated bowl, rounded bottom, slightly outslanting sides, horizontal rim with rounded lip. Painted interior of bowls of Ararí Red Excised, White-Retouch common vessel shape 1.
2. Small, open bowl with outcurving sides, direct rim, with a coil added around the exterior generally about 1 cm. below the rim top, producing a decorative, often scalloped flange. Painted interior of occasional bowls of Ararí Red Excised, common shape 4.
3. Shallow, open bowl with annular base and exteriorly thickened rim. Painted interior of occasional bowls of Ararí Red Excised, common shape 6.
4. Mildly carinated bowl. Painted interiors of occasional bowls of Anajás White Incised, rare vessel shape 2.
5. Carinated bowls. Painted interiors of bowls of Pacoval Incised, common vessel shape 4.
6. Stools (pl. 84, *a*).
7. Miniature bowls.
8. Globular bodied jars with small mouth and everted rim. Height 17–32 cm. (Palmatary, 1950, pl. 85, b).
9. Cylindroid jars with flat or conoidal bottom, vertical or slightly insloping sides, exteriorly thickened rim. Height 17–52 cm. (Palmatary, 1950, pls. 32, e; 69, e; 87, b).
10. Double or multiple bowls (Palmatary, 1950, pls. 70, d; 74, a–b).
11. Anthropomorphic vessels (Palmatary, 1950, pl. 75, b).

DECORATION (pls. 72–76):

Technique:

I. Red or black paint on a white-slipped surface. The color of the red paint may vary from red to rust, orange brown, dark reddish brown, or even dark brown because of uneven firing conditions or because of difference in the thickness of the paint, giving it greater or less transparency. At the darker end of the range, red-painted designs are not distinguishable from those originally painted black. On the other hand, the use of a true black pigment is attested by the presence of polychrome designs using both red and black. Black-on-white is considerably less frequent than Red-on-white; however both color combinations occur on bowls and jars. In all painted vessels, the paint has a dull finish that contrasts sharply with the surface of the underlying white slip when the latter is well polished. Painting is employed in the following variations:

- *A. Lines:*
    - 1. Wide, solid and dotted lines, width 2–5 mm. (Palmatary, 1950, pls. 31, b, 69, a: Red-on-white). Used on bowl interiors, the exterior being Pacoval Incised or, rarely, Anajás White Incised.
    - 2. Wide and narrow lines. In this and other categories using wide and narrow lines, the actual width is related to vessel size (i. e., the narrow lines on large vessels may exceed the width of wide lines on small vessels). Interior of bowls; exterior may be painted, incised or excised. (Palmatary, 1950, pl. 38, c: Black-on-white).
- *B. Lines and solid areas:*
    - 1. Narrow and wide lines and solid areas, the narrow lines being typically in pairs (Palmatary, 1950, pls. 82, b; 86, b: Red-on-white; pls. 81, a, 82, a: Black-on-white). Interior of bowls or exterior of jars; bowl exteriors may be plain or excised.
    - 2. Narrow or wide lines and hatched areas. Interior of bowls; exterior may be plain, painted or excised (Palmatary, 1950, pls. 77, c; 70, f; 99, a and c: Red-on-white; pl. 69, c: Black-on-white).
    - 3. Wide lines and solid areas. Interior or exterior of bowls (Palmatary, 1950, pl. 32, c: Red-on-white).

II. Polychrome designs combining 2 colors (red and black or red and orange) on a white-slipped surface. Most frequently these are a shade of red and one of black. In the case of filled red lines (type C), the colors are red or brown and light orange. The colors are combined in 3 ways to produce a 2-color design on a white background:

- A. Red lines accented with black. The skeleton of the design is drawn in red, after which pendant dots, corner "reinforcements" and the centers of small rectangles, triangles, or crosses are painted black. This type appears to be restricted to Pacoval and is infrequent there (fig. 128, *a–c*).
- B. Independent use of red and black, with lines or areas of one color separated from those of the other color by an unpainted zone (Palmatary, 1950, pls. 32, f; 71, b, e–f; 93). This is by far the most frequent variety and occurs on both bowls and jars (fig. 128, *d–f*).
- C. Filled red lines. The design is drawn in paired, narrow, red or brown lines and the area between them is painted a light orange or red (Palmatary, 1950, pl. 28, c). Restricted to bowl interiors and to tangas (fig. 129, *a–e*).

Motif: The same motifs are used in all the varieties of Joanes Painted in about the same relative frequency. Spirals are exceedingly common, principally the single variety, and are usually rounded or square. Interlocking spirals are somewhat less abundant. Also exceedingly common is a T or L (half-T), always representing an unpainted area produced by painting a stepped outline on the interior of a triangle or small field of

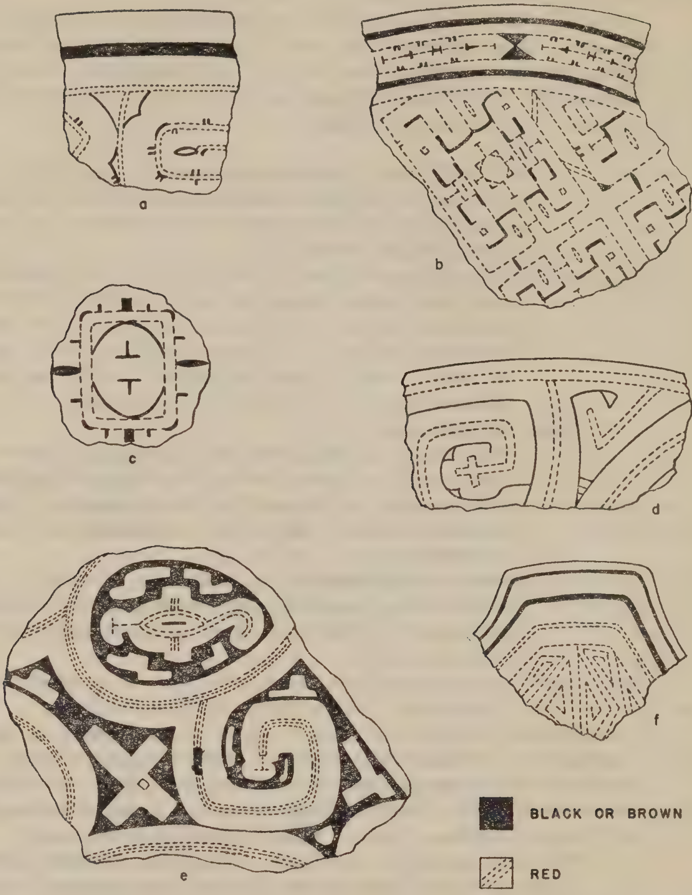

FIGURE 128.—Joanes Painted, Marajoara Phase. *a–c*, Polychrome Type A. *d–f*, Polychrome Type B.

another shape. Small, pendant dots along narrow lines are another popular motif. Other elements include undulating lines (often in combination with T's. and like them representing the white, unpainted background rather than a painted line), stylized faces (most typical on tangas), triangles, rectangles, crosses, diamonds and short wavy lines. The bodies of large burial urns often include an exotically stylized face along with geometric elements.

ASSOCIATED TECHNIQUES: Anajás Red Incised, Anajás White Incised, Arari Plain Excised, Arari Red Excised, Arari Red Excised White-Retouched, Arari Double-Slipped Excised, and Pacoval Incised.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Red-on-white Variety A–1 and Polychrome Variety A are early, being found only at Pacoval. No trends are evident stratigraphically in vessel shape (Appendix, table 47).

CHRONOLOGICAL POSITION OF THE TYPE: Joanes Painted as a whole shows a slight decline in popularity, although it is always by far the most frequent method of decoration in the Marajoara Phase.

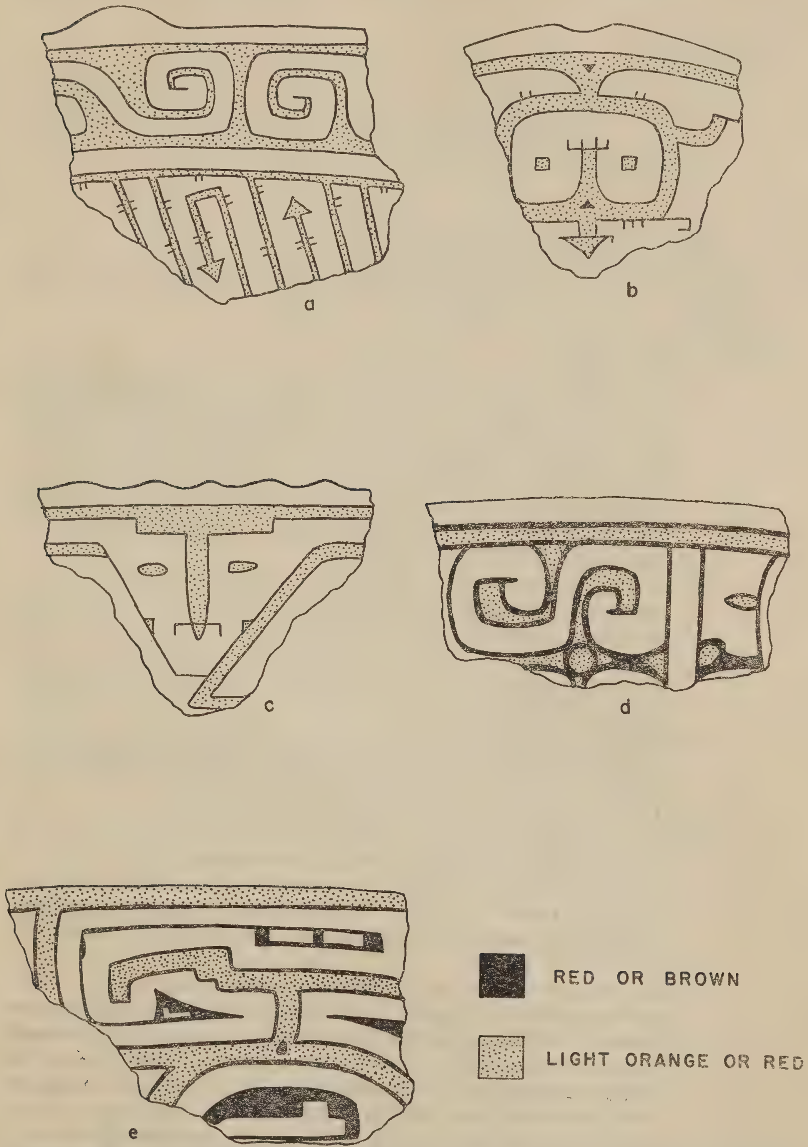
a
b
c
d
e
RED OR BROWN
LIGHT ORANGE OR RED

FIGURE 129.—Joanes Painted, Marajoara Phase. *a–e*, Polychrome Type C.

PACOVAL INCISED

PASTE AND UNSLIPPED SURFACE: Predominantly on Inajá Plain, occasionally on Camutins Plain; see those type descriptions for details of temper, firing, surface finish, etc.

SLIPPED SURFACE:

White Slip:

Color: White; irregular firing sometimes gives a cream or orange tint.

Treatment: Fine, smooth on bowl interiors, sometimes showing faint luster. On bowl and jar exteriors smoothing tends to be less perfect, leaving smoothing tracks and some unevenness.

Hardness: 3–5.

FORM:

Rim: Solid or hollow, exteriorly or interiorly thickened, rounded or flattened at different angles producing a faceted lip.

Body wall thickness: 4–12 mm. The entire range is represented in all vessel shapes.

Bases: Rounded or flat.

Common vessel shapes:

1. Shallow, open bowls with flattened bottom, outflaring sides and hollow rim produced by folding the upper edge toward the interior or by the addition of a flattened coil on the interior, changing the angle of the interior wall so that in some cases it becomes almost vertical. Thickness of hollow rim 1.5–3.0 cm.; body wall thickness 5–9 mm.; maximum diameter 55 cm.; maximum depth 9 cm. (Palmatary, 1950, pls. 38, a; 39, j). Incised design covers interior or exterior (fig. 130–1).
2. Shallow, open bowls with flattened or rounded bottom and interiorly thickened, solid rim, usually indistinguishable from shape 1 rims except in cross section. Lip typically rounded, rarely flattened. Rim thickness 1.2–2.0 cm.; body wall thickness 5–12 mm.; maximum diameter 44 cm. Incised design covers exterior and interior (fig. 130–2).
3. Shallow, open bowls with rounded or flattened bottom and exteriorly thickened rim with rounded lip. Diameter 24–44 cm. (Palmatary, 1950, pl. 24, b–c). Incised design covers interior, occasionally also the upper part of exterior (fig. 130–3).
4. Bowls with flat bottom, outslanting sides and exteriorly thickened rim, sometimes slightly everted with rounded or bifurcated lip. Rim thickness 1.4–1.8 cm.; body wall thickness 6–10 mm.; rim diameter 10–29 cm.; depth 5–12 cm.; base diameter 12–16 cm. (Palmatary, 1950, pls. 28, f; 48, a). Incised design covers the exterior (fig. 130–4).
5. Carinated bowls, the upper walls joining the lower ones so as to produce a marked change in direction, but usually with a more rounded and less pronounced angle than on Ararí Plain Excised because of the outward slant of the upper walls and the lack of exterior thickening at the carination. Rim exteriorly thickened with a rounded lip; bottom flattened. Rim thickness 1.2–2.2 cm.; body wall thickness 4–12 mm.; rim diameter 25–50 cm.; upper wall height 6–12 cm. Incised design covers the exterior wall (fig. 130–5).

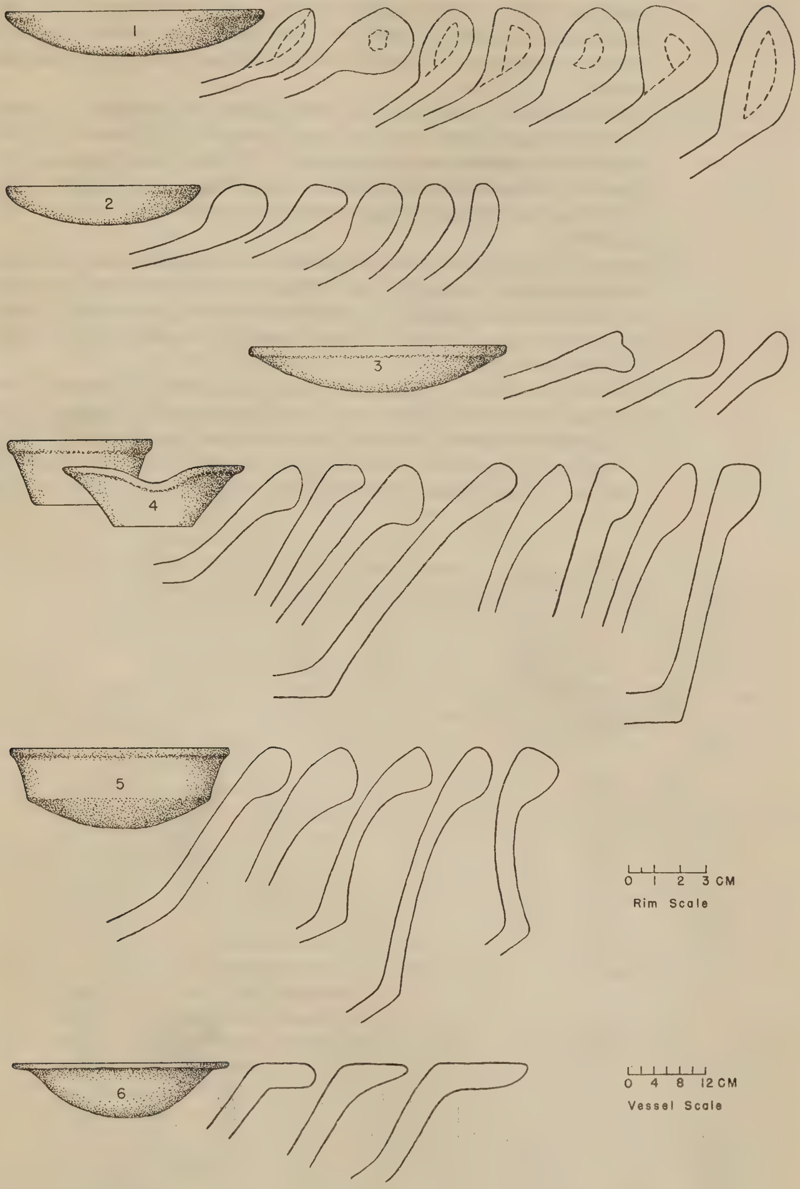
1
2
3
4
5
6
0 1 2 3 CM
Rim Scale
0 4 8 12 CM
Vessel Scale

FIGURE 130.—Rim profiles and vessel shapes of Pacoval Incised bowls, Marajoara Phase.

6. Bowls with rounded bottoms, curved sides and broad, horizontal rim 2.2–3.7 cm. wide across the flat top. Diameter 22–34 cm. (Palmatary, 1950, pls. 37, c; 38, j). The red-retouched design is usually confined to the flat rim top; rarely, also found on the exterior (fig. 130–6).
7. Deep, carinated bowls or jars with truncated conoidal bottom, vertical, slightly concave wall and exteriorly thickened, everted rim with a rounded or angular lip. Wall height comprises about two-thirds the total height, which is 29–33 cm. (Palmatary, 1950, pl. 33, a–b). Incised design covers the exterior of the wall (fig. 131–7).
8. Jars with flattened bottom, depressed-globular body and tall neck terminating in a slightly everted, exteriorly thickened rim with a rounded or angular lip. Height 33–46 cm. (Palmatary, 1950, pls. 18, a and c; 33, e). Design covers the exterior (fig. 131–8, pl. 78, *b*).
9. Jars with flat bottom, sides outsloping to maximum diameter about one-third of the distance from base and then insloping to the exteriorly thickened rim with a rounded or angular lip. Height 30–60 cm. (Palmatary, 1950, pls. 22, a and d; 29, a–d, 33, c–d). Incised design covers the insloping walls on the exterior (fig. 131–9).

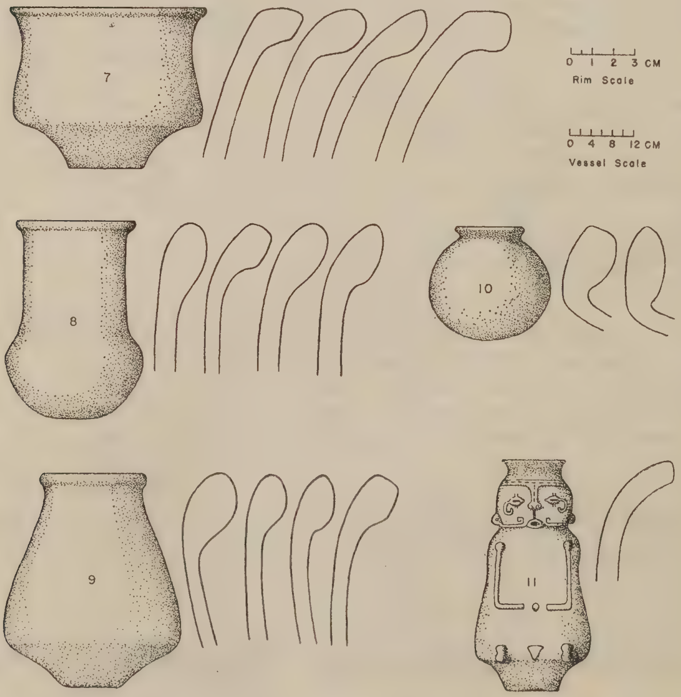

FIGURE 131.—Rim profiles and vessel shapes of Pacoval Incised jars, Marajoara Phase.

10. Globular bodied jars with constricted mouth and exteriorly thickened rim. These are often asymmetrical with the bottom slightly flattened off-center. Height 22–30 cm. (Palmatary, 1950, pls. 18, b and d; 82, c). Incised design covers the exterior (fig. 131–10, pl. 78, *c*).
11. Anthropomorphic jars with truncated conoidal base, walls insloping or recurved to neck, then expanding to form the head at top of which is jar mouth with an everted rim. Stylized anthropomorphic facial features; anatomical details on the body absent or suggested by low relief, nubbins, or small bosses. Height 36–77 cm. (Palmatary, 1950, pls. 19, e; 23, d; 30, a; 34). Incised design covers the exterior. A less-common variety has a flat bottom and a cylindrical or rounded body with slightly more anatomical detail. One example has the arms modeled in the round and raised to the mouth. Sex is female. Two of this type from Pacoval are 22 and 35 cm. tall (Palmatary, 1950, pl. 27, a–b; fig. 131–11, pl. 78, *a*).

Rare vessel forms;

1. Jars with flat bottom, four-lobed body, short, vertical or anthropomorphic neck and exteriorly thickened rim. Height 20–55 cm. (Palmatary, 1950, pls. 18, e; 19, b and d; 28, k). Neck Pacoval Incised with body Anajás White Incised. When the neck is not anthropomorphic, two opposite lobes of the body bear vertical applique strips flanked by two nubbins.
2. Bottles with a narrow mouth 4.5–5.5 cm. in external diameter, a short bulbous upper section separated by a necklike constriction from the large body. No complete vessel of this type exists, but several sherds from Pacoval represent the upper part. Height from the neck constriction to the rim top is 8.3 cm. Similarly shaped jars with the bulbous upper part connected to the main body by four independent flues come from Teso do Severino (Palmatary, 1950, pl. 28, i and j). Incised design on exterior.
3. Stools (Palmatary, 1950, pl. 28, g).
4. Bird effigy (Palmatary, 1950, pl. 28, d).
5. Complex jar composed of 4 figurines with intertwined arms, with a flat bottom and a bottle type neck (Palmatary, 1950, pl. 26, a).

DECORATION (pls. 77, 78):

Technique: Diagnostic feature is the presence of incised lines that have been colored or "retouched" with red. Lines so treated are typically wide (1–3 mm.) and sharply defined. In a rare variation, the red line is formed by applying the pigment between two closely parallel, narrow incised lines. The design may be composed of (1) exclusively red-retouched lines, (2) red-retouched lines and broad, usually triangular or rectangular areas painted red, or (3) broad, red-retouched lines and fine, unretouched lines, which are sharply defined and occasionally cut through the slip to the underlying orange surface. The fine, parallel lines are not always evenly spaced and may be broken where one stroke ended and another was begun carelessly so as to overlap rather than join the end of the one previously completed. Similar overshooting is also occasionally present at corners. The red-retouching was done with a thick, cinnabar-red pigment and was frequently applied either carelessly or with too wide a brush so that the red line overlaps the edge of the incision. Rare examples have a dark-brown or black instead of a red-retouch, but at least in the case of the dark brown this could be the result of a firing difference. Red-touched lines and areas and unretouched lines are used in the following combinations:

1. Retouched lines alone (Palmatary, 1950, pl. 37, b–c). On jar or bowl rims or to outline anthropomorphic features on jars and figurines (pl. 77, *j*, rim; 78, *a*).
2. Retouched lines and retouched areas filled with lines (Palmatary, 1950, pls. 19, d; 28, k; 38, f). Jar necks and bowl exteriors (pl. 78, *b*).
3. Retouched lines alternating with single, paired or triple narrow incised lines (Palmatary, 1950, pls. 24, b and c; 32, a; 37, e). Interior or exterior of bowls.
4. Retouched lines and areas alternating with single, paired or triple, narrow incised lines (Palmatary, 1950, pls. 18, a–d; 23, e–f; 29, a–d; 33, a-b; 33, d-e). Typical on jar exteriors (pls. 77, *e*, 78, *c*).
5. Alternation of paired, narrow incised lines, sometimes also ovals and triangles, the space between them painted red, and single, paired or triple, narrow incised lines (Palmatary, 1950, pls. 24, a; 35, a). On bowl interiors and rims (pl. 77, *a-b*, *f*).
6. Broad, single, retouched lines dividing large rectangular or irregularly shaped fields filled with complex arrangements of narrow incised lines (Palmatary, 1950, pls. 39, j; 48, a). Exterior of shallow bowls (pl. 77, *j*).

Motif: The majority of the designs on bowls incorporate an interlocking spiral, one member of which is a red-retouched line and the other a single, paired or triple, narrow incised line. Commonly associated with this is a pair of interdigitating lines, composed of a red-retouched line with four short, vertical projections that fit between a similar number of corresponding projections from a paired, narrow, unretouched line. Predominant on jar exteriors is a continuous series of angular, generally _/‾–shaped fields, formed by single, paired or triple, narrow incised lines and containing a single, red-retouched line with various numbers of triangular appendages. This red-retouched line may be widened so as to cover half the surface of the field it occupies.

Associated techniques: Pacoval Incised may be used in conjunction with one or more of the following decorative types: Joanes Painted, Anajás White Incised, Ararí Red Excised White-retouch, and small adornos. When combined with Joanes Painted, the latter technique is used on the interior of bowls with Pacoval Incised occupying the rim or exterior, or both. Anajás White Incised may be found on the exterior of bowls or the body of jars with Pacoval Incised on the remaining surfaces. Association with Ararí Red Excised, White-retouch is rare, limited to a few instances of Pacoval Incised designs just below the rim of a semicylindrical Ararí Red Excised, White-retouched jar.

Temporal differences within the type: None.

Chronological position of the type: Red-retouching of lines to produce a color contrast with the white slip is an early technique in the Marajoara Phase which dies out after Fortaleza site and is absent during the latter part of the Phase sequence.

UNCLASSIFIED DECORATED

There are very few decorated sherds from the Marajoara Phase that cannot be classified readily into one of the decorated types if alteration of surface color by accidental firing differences is taken into account. Those left in this residue are all varieties of punctate, often combined with incised lines. All but one has an unslipped surface.

PUNCTATE:

1. Wedge-shaped punctates forming straight lines. The motif consists of concentric squares with the area between them divided by diagonal lines into fields filled with parallel punctated lines (similar to Anajás Plain Incised on pl. 52, *g*). Upper exterior of small six-sided jar with rounded bottom, constricted mouth, everted rim. Height 7.5 cm., maximum body diameter 10.5 cm., mouth diameter 7.0 cm.
2. Rows of round punctates following lightly incised guide lines. Division into areas, in each of which the lines are parallel to each other but diagonal to those in the adjacent area. Exterior of a sherd from the shoulder of a small jar.

PUNCTATE AND INCISION:

1. Single, double or triple incised lines separating irregularly shaped areas in the manner often employed in Pacoval Incised, with these areas filled by oblong or wedge-shaped punctates, 2–3 mm. long. Exterior of a miniature jar with a flat bottom, rounded body and slightly everted rim.
2. Broad, parallel incised lines alternating with a row of dotted lines, formed by elongated, dashlike punctates. Neck exterior of a small jar with a slightly flattened bottom, rounded body and everted rim; height 7.5 cm., diameter 4.8 cm.
3. Narrow, parallel incised lines in threes separated by irregular rows of elongated punctates. Red-slipped exterior of small, heart-shaped bowl with flat bottom, vertical sides and rim slightly thickened on the exterior. Rim diameter 14.0 by 16.2 cm.; depth 6.0 cm.

CERAMIC AND NONCERAMIC ARTIFACTS

Since only durable materials like stone and pottery are preserved in a tropical forest environment, it is fortunate that the Marajoara occasionally used pottery for other things than containers. Marajó Island produces no stone suitable for axes or ornaments, and such material had to be acquired from elsewhere. Stone artifacts are rare in refuse deposits, probably because, being scarce, care was taken not to lose them. As most of the forest-dwelling South American groups have done in more recent times, it is probable that the Marajoara exploited the plant and animal resources to provide themselves with ornaments of odd seeds and brilliant feathers. The occasional ear plugs or labrets of pottery are drab to the eye of the archeologist, and must have been so to the makers as well, although the latter apparently devoted no effort to making them more attractive with painted or excised designs.

In the descriptions of artifacts that follow, stone and ceramic objects of the same type have been described together because *what* was made is of more significance than the material used. Although the total is small and gives only a glimpse of Marajoara Phase material culture, what has survived is sufficiently unique to make this complex readily distinguishable should it ever be found elsewhere in South America in the future.

Axes.—A number of people have reported finding stone axes in Marajoara Phase sites. One of the earliest is Derby (1879, p. 227), who describes them as diorite, well polished, and not distinctive in shape, and says they are uncommon. Netto collected a number from Pacoval, which he specified in one place as 10 to 12 (1885, p. 445) and in another as "some 20" (op. cit., p. 270). He adds that "Sr. Rumbelsperger, who followed me a year later, also found no inconsiderable number of them" (op. cit., p. 445). Lange later included "a quantity of stone axes and various diorite implements" in his collection from the same mound (1914, p. 322).

Farabee's field notes (1914) on the Fortaleza group mention a stone ax from Mound 4, 2 from Mound 7, trench 4, and a small one of quartz from Mound 7, trench 6. An ax from Cajueiros and a broken specimen from Sanharão are recorded as having been presented to the Museu Paraense by the Barão de Marajó (1895, p. 88). A fragment was found at Pacoval do Cururú by Nimuendajú (Rydén, MS.). The only specific information on size or shape comes from Barbosa Rodrigues (1876–78, fig. 57), who illustrates two examples. One is a fragment, for which the provenience is simply "Marajó Island." The other, from an unspecified mound, is polished diorite, somewhat asymmetrical, with a rounded butt, flattened blade, and notched sides.

Our investigations produced three axes, one each from the surface collections at J–15, Camutins, Mound 1, and J–14, Mound 1, Guajará, and one associated with an upper burial (jar A) in cut 1 of the latter cemetery. The two surface specimens are miniatures and may be similar to the "little axes" Ferreira Penna found at Pacoval and Santa Izabel (1879 a, pp. 53–54). The one from Guajará (fig. 132, *b*) is of gneiss, well-shaped but not polished except adjacent to the bit. It is 4.6 cm. long, 3.2 cm. wide at the blade and 1.6 cm. thick. The sides taper slightly to the rounded butt, and the blade is sharp and nicked in the center. The Camutins miniature (fig. 132, *a*) is of greenish diorite and is almost square: 3.5 cm. long by 3.8 cm. wide, with a maximum thickness of 1.8 cm. The surfaces are well polished, sloping toward the blade and sides in three facets that join at pronounced angles. The butt and one of the edges are battered as though the implement had been extensively used as a hammer in spite of its smallness and lightness. The blade is considerably nicked from use.

The ax found outside the base of burial jar A (J–14, Mound 1, cut 1) is somewhat larger and has a rounded and polished, blunt blade of the type used for preparing bast fibers (fig. 133). The blade is convex, the sides straight and slightly tapering to the butt, which is concave and the only unpolished part of the implement. The surfaces are smooth and unworn except for a chip at one edge.

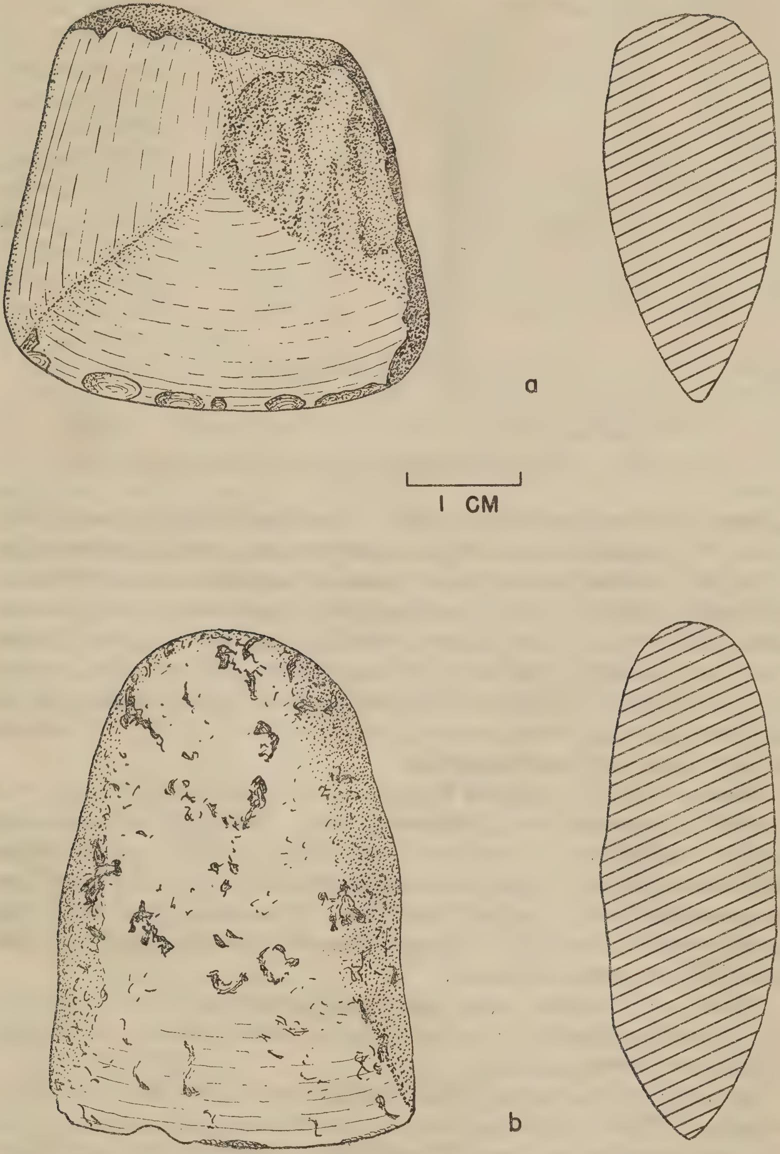

FIGURE 132.—Marajoara Phase miniature axes. *a*, J–15, Mound 1. *b*, J–14, Mound 1.

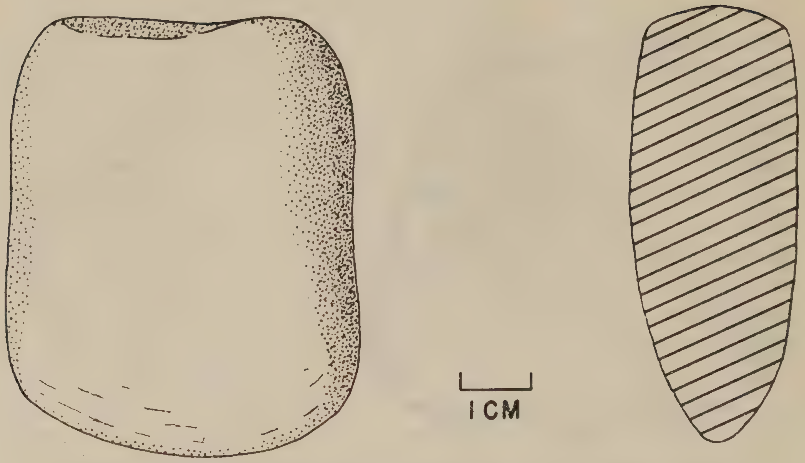

FIGURE 133.—Marajoara Phase stone ax from J–14 ,Mound 1, cut 1.

Length is 5.5 cm., maximum width 4.7 cm. and thickness at the butt 2 cm. The material is diorite, dark gray to gray green in surface color.

Highly polished axes of green diorite or nephrite are mentioned by Holdridge (1939, p. 75) as coming from the mounds. A specimen from Laranjeiras, in the Museu Goeldi, is 9.5 cm. long and 4.3 cm. wide, with straight, flat sides, a square butt, and a well-sharpened bit. Thickness is 2.2 cm. The surfaces are polished, but all the the flaws have not been removed, and the butt is rough. The stone is light green with iron impurities.

Beads.—Very few objects that can be identified with certainty as beads have come from Marajoara sites. The only authenticated find is a recent one in which 65 cylindrical beads of a white stone with dark-brownish veins (nephrite?) were discovered in a burial urn in a cemetery on the upper Camutins. These are drilled from both ends toward the middle, making V-shaped holes joined at the small end (Hilbert, pers. commun.).

Thirty-eight animal teeth, perforated for stringing on a necklace, were found by Mordini in one of the upper levels of his cut at Panellas (Palmatary, 1950, p. 279).

Earplugs.—Ornaments of this sort are rare, but a few have been recorded. Two small spools are in the Peabody Museum, Harvard University collection from Pacoval (fig. 134, *b*). Both have short, constricted shafts and expanded, concave ends, one of which is of less diameter than the other. They are circular, but otherwise crude and rough. The first has an orange paste with a trace of white slip and a fine hole pierced through the center. It is 1.3 cm. thick, 1.5 cm. in diameter on one surface, and 1.7 cm. in diameter on the other.

The second is Inajá Plain with a blackish surface; 1.2 cm. thick, 1.6 and 1.8 cm. in diameter on the disks. A similar specimen is in the University Museum, Philadelphia, collection from Camutins. It is 3 cm. in diameter and has smooth and polished surfaces. An example (fig. 134, *a*) from the surface collection of Camutins, Mound 1, is comparable in all respects, except that it is 2.5 cm. in diameter and slightly more ornate, having a red slip and two parallel, finely incised lines on the flanges. There is a perforation through the center that may have been used to insert a feather or a tassel.

The ears of anthropomorphic jar L of J–14, Guajará, cut 1, contain ornaments in the lobe that appear to be earplugs of this type (pl. 76; fig. 147, *a*). They bear a painted design on the surface and have a pendant tassel.

Figurines.—Stylized anthropomorphic figurines, in a complete or fragmentary condition, are relatively common in the refuse on cemetery mounds. The majority are small, although some are 25 cm. or more in height (Nordenskiöld, 1930, frontispiece). They may be unslipped, red slipped or white slipped, and undecorated, incised, excised, or painted. Painting is most frequent, either red-on-white or polychrome, in an all-over design that emphasizes the low relief arms and other anatomical characteristics when present. The arms are often absent or abbreviated and the figure is typically rendered seated, with the legs and body forming a U-shaped base. The legs or knees are rounded at the end and may have toes at their base. Breasts and sexual organs are sometimes shown, and where sex is

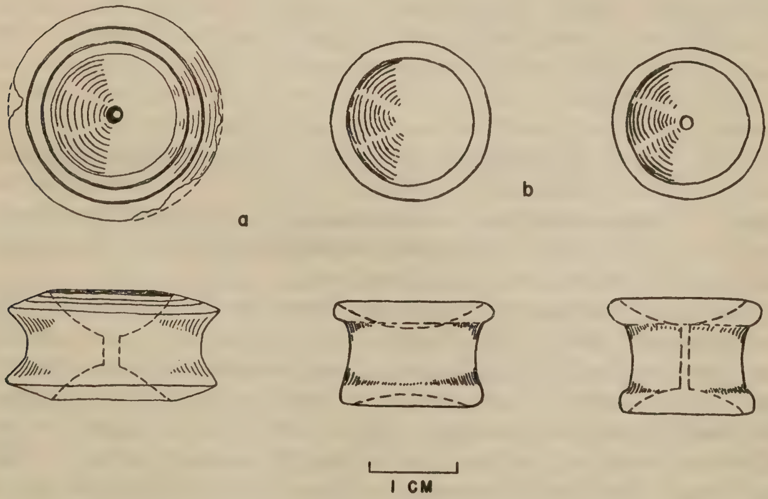

FIGURE 134.—Marajoara Phase pottery ear plugs. *a*, J–15, Mound 1. *b*, Pacoval.

indicated, it is to the authors' knowledge invariably female. The shape of the head is stylized in two basic ways: (1) sloping back from the forehead and up from the occipital area to form a pointed top (pl. 79, *b*), and (2) cylindrical with a rounded top, a high forehead and two horizontal protuberances at the back that probably represent the hairdress (pl. 79, *c*, *e*). Netto (1885) illustrates a large series of the first type, and suggests that the distortion of the skull shape is evidence of the practice of cranial deformation. The presence of a deformed skull in one of the urns from J–14, Mound 1, Guajará (p. 273) lends support to this interpretation. Facial features follow a standard method of representation: the eyebrows are joined to the nose in a Y or T and may continue around and down the side to form the ear; the eyes are low relief, either pinched up or appliqued, as is the mouth. The features are generally outlined by painted lines or, when decoration is incision, by incised ones.

The majority of the figurines are hollow and many contain small pellets that make them rattle. Their restriction to cemeteries is an indication that they held some ceremonial significance.

Two small figurines were collected at the Camutins cemetery (J–15, Md. 1) by the 1949 expedition. One (pl. 79, *b*) is somewhat pear-shaped, with a constriction just above the middle dividing the body from the head. Except that the body slopes outward in front in two low bosses, there is little relief indication of anatomical details. The face is well-modeled, with low protuberances for eyes and mouth, higher ones for nose and ears, and a high-peaked headdress with a horizontal perforation thru the tip, perhaps for suspension of the figurine with a cord. The surface is completely covered with a white slip. The eyes, nose, and mouth are outlined conventionally with black paint, which is also used to execute a simple design on the body and to depict the arms. The hair at the sides is black and the painted line extends over the ears. A red line runs from the forehead over the top of the headdress and down the back, where it joins a solidly painted red area at the back of the head. The bottom of the figurine is also painted red. Height is 9.7 cm., base 6.2 (front-back) by 4.5 cm. It is heavy and probably solid construction. The *caboclo* who found it said it was with a burial urn.

The second figurine (pl. 79, *a*) was found on the surface near the top of the east end of J–15, Mound 1. It is the same height as the one just described, but different in execution and has a number of small pellets inside it that produce a loud rattle when it is shaken. The head, once again, is large in proportion to the body, and on top of it is a headdress that looks something like a modern lady's "pill-box" hat. The body increases in diameter from the neck to the base, to which the outturned legs give a semicircular outline, flat in front. The arms are raised to the sides of the head, and one joins the body noticeably higher than the other. The surface has suffered from exposure, but there is no indication that the facial features were ever as prominent as in the first figurine. Except on the bottom, the surface is white-slipped and painted with a predominantly rectilinear design in red. Height is 9 cm., base 7.2 (side-side) by 5.4 cm. A corner of the headdress is broken off, showing the paste to be dark gray.

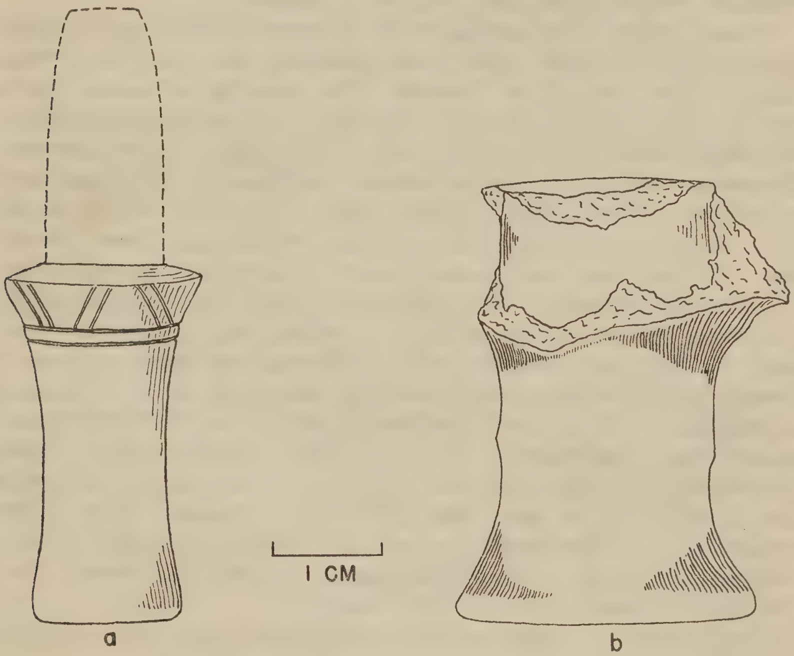

FIGURE 135.—Marajoara Phase pottery labrets from J–15, Mound 1, surface. Reconstruction is based on a complete stone specimen from Panellas.

Labrets.—There are three objects, two from the surface of J–15, Camutins, Mound 1, and one from Panellas, that may have been labrets. The Panellas example is the only complete one, and also the only one of stone. It is translucent, gray-green nephrite and divided into two unequal parts. The longer one is a concave-sided cylinder, expanding toward both ends. Issuing from the greater expansion is a slender projection with a rounded tip (Palmatary, 1950, pl. 105, k and p. 280). One of the ceramic specimens (fig. 135, *a*) has an identically shaped base and shows a break where the slender "point" is attached on the Panellas one. The existing part is 3.5 cm. long, 1.8 cm. in diameter at the large end, and 1.5 cm. at the small end. The surface is light-gray, well smoothed, and ornamented with paired incised lines at the region of greatest diameter.

The other specimen from Camutins, Mound 1 (fig. 135, *b*) is considerably larger and had no projection from the wide end. The sides flare out to the base, which is 2.6 cm. in diameter. The opposite end, which is wider, has been broken off. The surface has been superficially smoothed, and remains uneven but not rough. Length is 4.1 cm. The manner of breakage indicates that the flanges were modeled with additional clay on a basic cylinder.

Spindle whorls.—Cylindrical to round ceramic objects, some closely resembling the spindle whorls from Colombia, have been found from time to time, notably at Pacoval. The majority are crude, but a few are well made and carefully decorated. All have lengthwise perforations through the center. Of 15 examples in the American Museum of Natural History collection from Pacoval, 11 are solid and cylindrical with straight or slightly concave sides (fig. 136, *c–e*, pl. 80, *d–f*). Length varies from 3.5 to 5.3 cm. and diameter from 3 to 4.2 cm. Four of these have incised decoration and one has crudely applied, applique bands. The remaining 4 are hollow and have the maximum diameter at the center, from which they taper toward both ends. This type is more carefully made than the solid ones and is decorated with delicate, incised lines (fig. 136, *f–g*; pl. 80, *a–c*). Length is from 3.7 to 5.4 cm. and diameter 3.5 to 5.0 cm. Two have small pellets inside, producing a rattle. A similar object, found by Hartt at Pacoval (1871, fig. 72, h, and p. 270), is 5.7 cm. long and incised in the paired-line style identified with Guajará Incised. Two of the concave-sided, cylindrical type, one plain and one with incised decoration, are in the Peabody Museum, Cambridge, collection from Pacoval (Palmatary, 1950, pl. 105, l and m).

Another type of spindle whorl is in the shape of a flat disk. Hartt describes one of these from Pacoval made from a sherd:

> It has a diameter of 8 cm. and appears to be made of the flat bottom of a broken vessel, reworked to give its present form and perforated after the clay was fired and probably after the vessel to which it belonged was broken. The outline is not a perfect circle and the hole slants a little. [Hartt, 1885, p. 59 and fig. 12.]

One surface is ornamented with an incised, interlocking spiral.

Farabee (1921, p. 148) says he found only one object in all his excavations that was identifiable as a spindle whorl. He probably refers to a specimen now in the University Museum, Philadelphia, collection listed as from Camutins: a flat disk with smoothed but undecorated surfaces, a flat edge, and a hole pierced approximately through the center (pl. 80, *g*). The diameter is 5.2 cm. His field notes on the Fortaleza group, however, also mention a whorl fragment from

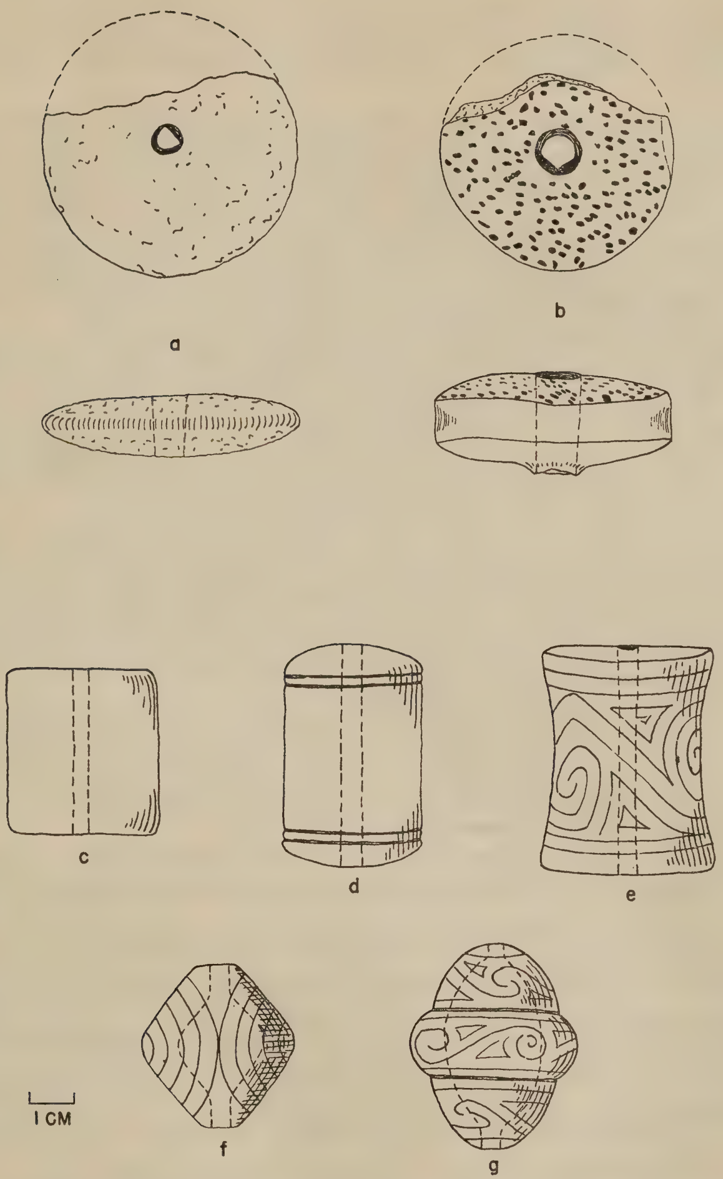

FIGURE 136.—Marajoara Phase pottery spindle whorls. *a*, J–15, Mound 1. *b*, J–14, Mound 1. *c–g*, Pacoval.

trench 5, Mound 7 (the cemetery). A similar specimen, found by us on the surface of J–15, Camutins, Mound 1 (fig. 136, *a*), is 5.8 cm. in diameter and 1.4 cm. thick at the center, tapering down toward the edge.

The surface collection at J–14, Mound 1 (Guajará) produced a spindle whorl 5.4 cm. in diameter, but considerably thicker than the examples just described, measuring 2.3 cm. at the center and 1 cm. at the flattened edge (fig. 136, *b*). The upper surface is ornamented with an overall application of fine, irregularly spaced punctates. The hole in the center is 1 cm. in diameter and was punched through from the ornamented side leaving a pronounced ridge around the exit on the opposite face. The paste is hard, compact Inajá Plain.

Also from Guajará are the only examples of clay with cord impression recorded from Marajoara sites (pl. 80, *h–j*). They consist of lumps of clay 2.0 to 2.5 cm. thick, with a slight curvature. Two of the three are smooth on the interior surface and two narrow abruptly at one edge to 7 mm. Junius Bird, American Museum of Natural History, examined the cord impressions and reported:

> Plasticene imprints . . . show what I believe is nothing more than a cord wrapping done while the clay was still damp. It certainly is not the impression of basketry or matting, nor do I think it possible to duplicate such markings with a cord-wrapped paddle. On the specimen where the impressions are spaced, the cord was slightly over 2 mm. in diameter, was of 2-ply construction, S spun and Z doubled, with three twists per 2 cms. Between the cord impressions, the clay was extruded and slightly smoothed off.
>
> The other specimen shows the cord impressions in contact with each other except at one place where they cut deeply into the soft clay. In that instance the cord is again 2-ply, S spun and Z doubled, with five twists per 3 cm. On one side the cord seems to have been over narrow leaves and failed to leave any impression on the clay. [Pers. corres., 1949.]

Spoons.—There exist in the museum collections a number of objects of consistent shape and small size that may have been spoons or dippers (pl. 81). They are oval to circular, with a short stem at one end, which is pierced with a small hole. This hole is fine, but experiment showed it to be sufficiently large for the insertion of a stick strong enough to function as the handle of a spoon. Use as a pipe seems ruled out by the attachment of the stem at or just below the rim in all but two examples, which would be at or above the tobacco level and thus prevent a satisfactory draw. In the 12 specimens in the American Museum of Natural History collection from Pacoval, the bowl ranges from 3.2 to 6.5 cm. in length and from 2 to 4 cm. in depth. Two have a crudely incised design, one is ornamented with a zigzag applique strip, and the remainder are plain. Of the four examples in the University Museum, Philadelphia, collection, the largest has a bowl 7.5 cm. long and is ornamented with incised lines and a small adorno at the end opposite the stem (pl. 81, *a*). A plain specimen (pl. 81, *e*) was found at J–15, Mound 17, cut 1, level 60 to 75 cm. The stem is attached at the base of the bowl, which is oval, 5.1 cm. long and 3.4 cm. deep.

Stools.—As unique and relatively abundant ceramic objects, stools are second only to tangas. The American Museum of Natural History collection from Pacoval contains enough complete specimens to give some notion of the variation in shape and size. All have the same basic form, in which a clay disk is attached to a flaring, annular base, inset at the point of attachment and with a diameter typically about 2 cm. smaller at its base than the disk (pl. 83). The majority are circular, but occasional specimens are oval. The disk surface ranges from flat to marked concavity and sometimes has a hole through the center, which is usually small, but may have a diameter equal to half that of the stool top. On 14 measurable specimens, the disk diameter ranges from 10.6 to 20.0 cm., but only 5 are under 15 cm. Two of the 14 are oval. Height runs from 1.5 to 8.0 cm., and is generally correlated with the size of the disk. All except 5 are more than 5 cm. tall. The thickness of the disk is typically between 1.5 and 2.0 cm.

At Pacoval, the majority of the stools are decorated and the techniques represented are Anajás Plain Incised, Anajás White Incised, Ararí Plain Excised, Ararí Red Excised, and Ararí Double-slipped Excised. One fragment has an adorno at one edge of the disk, and another probably existed on the opposite side. A stool with painted decoration is in the United States National Museum (pl. 84, *a*). Although no provenience is given, the early date of collection makes it probable that it comes from Pacoval. It is 18.5 cm. in diameter and 11.5 cm. high. The disk edge has an undulating applique band and small knob adornos, and there is a small perforation through the center. Nimuendajú found fragments of painted stools at Teso das Igaçabas (Rydén, MS.).

In his excavations in Mound 7 (cemetery) of the Fortaleza group, Farabee (1914) ran across a number of stools. Trench 6 produced half a dozen and trench 8 a group of nine. The majority are in the University Museum collection, and are typical in all respects. Decoration is with simple, incised motifs on an unslipped surface. Several have stylized, anthropomorphic faces on the side of the base, with the eyebrows, nose, eyes, and mouth in low relief and outlined with an incised line.

The Camutins group (J–15) is represented by 4 fragments of plain stools (2 with disk-edge adornos and 1 with low relief ridges on disk and base) and one of Anajá Plain Incised from the surface of Mound 1, and half of another with Guajará Incised decoration from the lowest level of Mound 1, cut 2. The latter had a disk diameter of 22 cm., a height of 5 cm., and was markedly concave on top. There is a very small adorno at one spot on the edge of the disk. A complete stool (pl. 83, *a*) with a well smoothed surface but no decoration came from just below the surface at the top of Mound 10. The flat disk is 19 cm. in diameter and the height, 5 cm. (For further illustrations, see Netto, 1885, pp. 395–397; Palmatary, 1950, pl. 25 c, d, e; pl. 28 g; pl. 77 c.).

Tangas.—Probably the most distinctive of the objects found in Marajoara sites are the tangas. Trianguloid, with an upper convex edge joining the other two concave edges in more or less sharp points, and with the third intersection at the bottom broad and rounded, they do not notably differ from the pubic coverings used by the women of many of the Tropical Forest tribes today (see Levi-Strauss, 1948, fig. 33; Schmidt, 1942, figs. 239–242) except in the material of their manufacture, which is pottery. In general size, proportions, bluntness or sharpness of the points, and curvature of the edges and surfaces, there is a range of variation that is probably correlated with differences in the anatomy of the wearers. A hole for the attachment of a belt cord is pierced from 1.9 to 3.4 cm. from each tip, depending on whether the point is slender or wide. The amount of wear produced by the friction of the cord on the exterior surface varies from none to a deep groove extending all the way from the hole to the tip (cf. Hartt, 1876, pp. 22–23). A tabulation of 110 tanga tip fragments with perforations from J–14 and J–15 gives the following percentage of degree of wear (Table P).

TABLE P.—*Differences in wear on tanga fragments*

Type	No wear		Slight notch		Deep groove		Total	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Red-slipped	27	32.6	34	40.9	22	26.5	83	100
Painted R/W	18	66.6	8	29.6	1	3.8	27	100

This may indicate that in late Marajoara times at least the red-on-white type was of predominantly ceremonial significance, while the plainer, red-slipped tangas received greater use.

Seven complete specimens, 6 of them red-slipped and 1 red-on-white, were recovered from burial urns in J–14 and J–15 cemeteries. Five additional red-on-white tangas were given to us by the *caboclo* living on the Camutins cemetery (J–15, Mound 1), who had found them in his own digging in the site. Measurement of these makes it possible to give specific figures that illustrate the variation in size and convexity. The six standardized measurements made are shown on fig. 137.

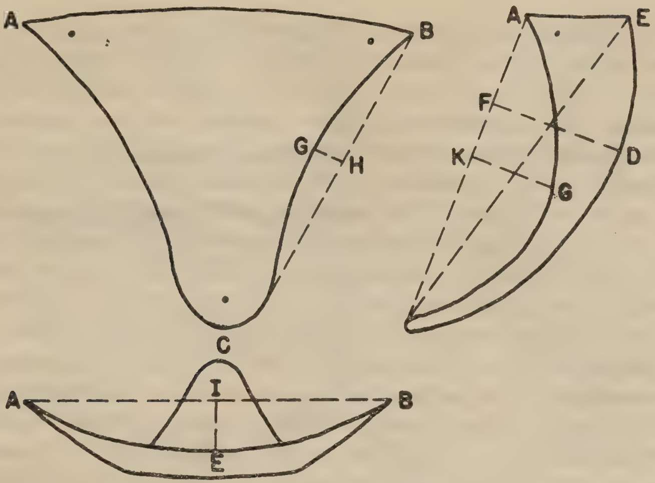

FIGURE 137.—Standardized measurements on tangas of the Marajoara Phase.

TABLE Q.—*Standardized measurements on tangas*

Measurement	Red-slipped	Red-on-white
	Cm.	*Cm.*
A–B	12. 0, 13. 4, 14. 0, 15. 0, 16. 5, 16. 5	13. 0, 13. 5, 14. 0, 14. 0, 14. 0, 14. 5
C–E	10. 5, 11. 5, 12. 0, 12. 0, 12. 0, 12. 0	9. 5, 9. 9, 10. 0, 10. 2, 10. 5, 10. 5
D–F	3. 0, 3. 0, 3. 2, 3. 5, 4. 0, 4. 5	4. 0, 4. 0, 4. 0, 4. 2, 4. 3, 4. 7
G–H	0. 5, 0. 7, 1. 1, 1. 2, 1. 2, 2. 0	0. 5. 1. 4, 1. 5, 1. 5, 1. 6, 2. 0
I–E	2. 0, 2. 5, 2. 6, 3. 0, 3. 0, 3. 4	2. 0, 2. 3, 2. 5, 2. 7, 2. 8, 3. 0
K–G	2. 5, 2. 5, 2. 5, 3. 0, 3. 5, 3. 6	2. 0, 2. 5, 2. 5, 2. 5, 2. 8, 2. 8
Thickness (all)	0. 5	0. 5

The major difference between the two types is in the amount of concavo-convexity of the surfaces, which is more pronounced in the red-on-white examples and accounts for the differences in dimensions D–F and K–G. Thickness is the most standard aspect and in about 90 percent of the sherds runs between 4 and 7 mm. The upper limit reaches 11 mm. in occasional examples.

The two varieties of tangas have a time distinction as well as a difference in shape. The red-slipped type (pl. 82, *d–e*) is in the minority in the earlier sites, but becomes equal in popularity at Camutins and dominant at Guajará. This transition is probably related to the trend toward abandonment of the more complex and precise types of ceramic decoration that is characteristic of the ceramic history in general.

Although the red-slipped tangas are often slipped on both surfaces, the painted ones are generally slipped only on the exterior or convex surface, with the slip carried over onto the interior in a band along the edge 4 to 9 mm. wide. The design is composed of fine, single, red lines or of paired red lines with the narrow, intervening space colored lighter red or orange. Across the top it is typical to have 2 bands or "friezes," each 1 to 2 cm. wide, which bear standardized motifs. The upper one is composed of three vertical and two diagonal lines placed equidistantly and separated by solidly painted triangular areas. This motif has been pointed out by Mordini (1934a, pp. 62–63 and 1929) as characteristic of the majority of the painted tangas, and it was present on all the painted specimens from J–14 and J–15 (pl. 82, *a–b*). There is greater variation in the second band, but here too there is repetition of a relatively small number of designs. It is possible that these designs had some symbolic significance of a social or religious nature, wearers of the same pattern belonging to the same group. The remainder of the surface bears a symmetrical and graceful rectilinear design built upon another limited number of motifs, which are almost identical in the 6 painted specimens from J–15. The range of latitude in this part of the design appears to have diminished with the passage of time, since considerable variation is present on examples from Pacoval.

While the function of tangas as pubic coverings by females cannot be proved, this conclusion fits the evidence of wear at the perforations and of ethnographic parallels. In most of the vessels containing a tanga, the sex of the individual was either unidentified or female. However, Newman's identification of the bones from jar M of J–14, Mound 1, cut 1, suggests a possible association with a male skeleton. Since the same vessel also contained a female, this tanga may have been displaced during or subsequent to the burial. If it is true that tangas occur only with females, then the important individual in jar L from the same site must be a female, which suggests an extremely high status for certain individuals of that sex. A further complicating factor is the exceedingly high percentage of fragments on burial mounds and their relative rarity in habitation sites. This situation would seem to imply a dominantly ceremonial significance for these objects, and has suggested to several students the possibility of a fertility cult (Netto, 1885, p. 436; Palmatary, 1950, p. 282; Angyone Costa, 1941).

Whistles.—Tocantins (1876, p. 54) describes "a kind of whistle 10 cm. long, hollow, with two holes of unequal diameters, and ornamented with relief spirals and other adornments," which apparently came from Pacoval. Holdridge (1939, p. 73) found "many little clay whistles in the form of birds . . . usually capable of three or four notes" at Monte Carmelo and similar objects at Laranjeiras (op. cit., p. 71).

Miscellaneous.—Pottery polishers and net weights of stone are said by Ferreira Penna (1879 a, pp. 53–54) to have been found by him at Pacoval and Santa Izabel. A cubical piece of clay with rounded

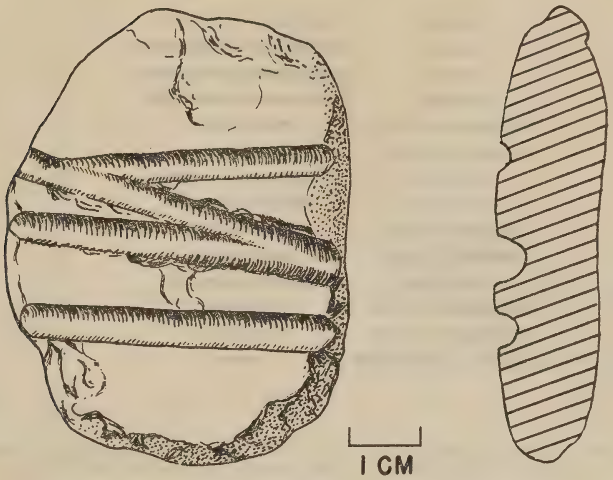

FIGURE 138.—Marajoara Phase grooved polishing stone from J–15, Mound 1, surface.

edges, perhaps a polishing tool, comes from Panellas (Palmatary, 1950, pl. 105, j). A flat piece of diorite (fig. 138), 1.5 cm. thick and roughly rounded off on the edges, with 4 grooves 5–6 mm. wide and worn 4–5 mm. deep on one surface, was found at the Camutins cemetery (J–15, Mound 1). A Camutins Plain sherd showing similar wear is in the University Museum collection.

CERAMIC HISTORY

Stratigraphic excavations were made in four mounds of sites J–14 and J–15 in an effort to provide a temporal basis for the analysis of Marajoara Phase pottery. The problem was complicated by two facts: intrusive burials disturbed the natural sequence of deposition of sherd refuse in the cemetery mounds, and sherds were sparse in the habitation mounds in spite of indications of abundance on the eroded slopes. After examination of the percentage distributions shown in the strata cuts, it was decided that the trends exhibited by cut 1 of J–15, Mound 14 (Inajasal) were most likely to be reliable because the refuse accumulation was deepest and, since this is a habitation site, the disturbance was likely to be minimal. This stratigraphic sequence shows the temporal relationship of the two plain wares (fig. 139). Inajá Plain, a sherd-tempered, pale orange-surfaced ware with a gray core, is at the peak of its popularity, 76.2 percent, in the lowest level of the excavation. Its subsequent history is one of decline to 16.9 percent in level 15 to 30 cm. During the same time there was an increase from 19.0 percent to 82.9 percent in the frequency of Camutins

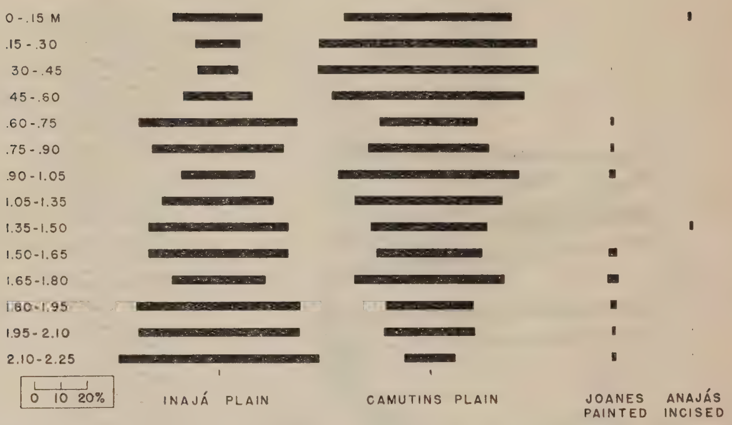

FIGURE 139.—Ceramic stratigraphy of J–15, Mound 14, cut 1, showing trends in the Marajoara Phase plain wares (Appendix, table 39).

Plain, also sherd tempered, but with a bright red-orange surface and core. Although the level to level occurrence of these two types is somewhat erratic as a result of the small sample per level (Appendix, table 39), the general trend is clear.

The same decline in Inajá Plain and increase in Camutins Plain are shown in cut 2 of J–15, Mound 1 and cut 1 of J–15, Mound 17. Although these are both burial mounds, no vessels were encountered in the immediate excavation and so the refuse accumulation was not likely to have been grossly disturbed. In order to minimize distortions resulting from the small samples per 15-cm. level, these were combined into divisions of 30 cm. (Appendix, table 40). When the two cemetery sequences are interdigitated (fig. 140), they cover approximately the same time span as Mound 14, cut 1. The two upper levels of J–14, Mound 1, cut 1 were seriated in this chart in order to give some indication of the relative position of this burial mound. The reliability of this seriation is dubious, however, because this strata cut produced a quantity of burial urns, and the dirt and sherd refuse must have been disturbed repeatedly. The only reasonably reliable conclusion that can be drawn is that this cemetery is generally contemporary with those of J–15, but not necessarily with the first half of the sequence rather than the second half.

The establishment of the decline in frequency of Inajá Plain and an increase in Camutins Plain as the predominant trend in Marajoara Phase plain wares introduced a basis for the seriation of surface collections from other sites. Before this could be done, however, a means had to be found for reducing the potentially disturbing factors of a small sample and selectivity for decorated sherds. Although the decorated types exhibit trends during Marajoara Phase history,

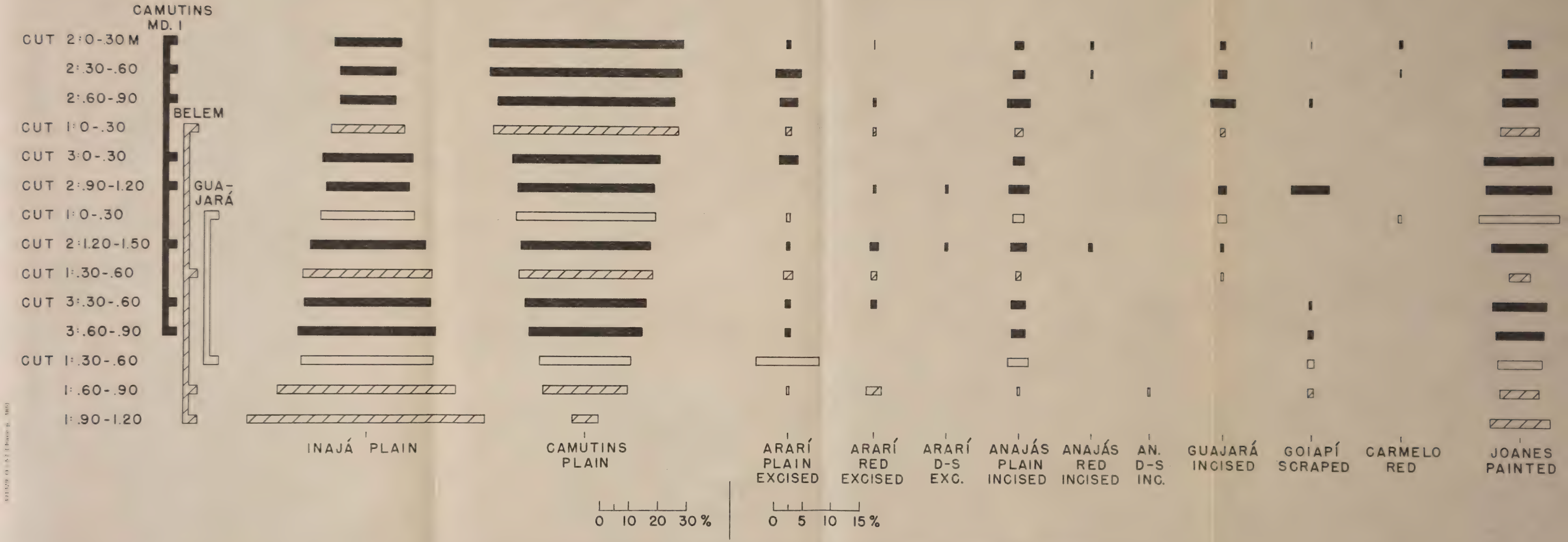

Figure 140.—Ceramic seriation of the Marajoara Phase sites of J–15, Mounds 1 (Camutins, Mound 1) and 17 (Belém), and J–14, Mound 1 (Guajará) (Appendix, table 40).

they could not be used in establishing a preliminary seriation of sites because the majority of the collections are too small to insure the inclusion of the rarer types. Furthermore, decoration is so rare on the pottery from habitation mounds that what is found is not likely to be illustrative of the total techniques in use at the time. The seriation had to be carried out on the basis of the plain wares, therefore, but this was complicated by the fact that most of the collections of known provenience were highly selected for decorated types. The analysis and classification of the decorated wares suggested a way out of this difficulty. It was impossible to discern any association of decoration with paste characteristics that would indicate a conscious selection of Inajá Plain for one kind as against Camutins Plain for another. The paste characteristics of each decorated type seemed to reflect instead the relative proportions of the plain wares in existence at the time, and altered temporally rather than in terms of decorated type. In other words, Pacoval Incised sherds are predominantly gray cored, not because there was an intentional association of these features of decoration and firing by the potters, but because Pacoval Incised is an early type and was made when Inajá Plain was the predominant plain ware. Types like Anajás Plain Excised that extend over the entire life of the Phase are gray cored at early sites and orange cored at late ones, reflecting the rise and fall in popularity of the basic plain wares.

Since there appears to be no correlation between type of decoration and the kind of plain ware on which it was placed, it seems reasonable to assume that the paste characteristics of the decorated sherds reflect the relative proportion of the plain wares being made at the time. On this basis, decoration and surface treatment were ignored and the sherds classified by their cross-sectional features—gray core was Inajá Plain and orange core, Camutins Plain. In addition to the 4 cemeteries we investigated, there are samples from 12 other sites that could be used for seriation (Appendix, table 41). Incorporation of these gives a sequence beginning with Pacoval dos Mello, with 92 percent Inajá Plain and only 8 percent Camutins Plain, and culminating in Furinho, where Inajá Plain has dropped to 37 percent and Camutins Plain has increased to 63 percent (fig. 141). It will be noted that two collections from Pacoval are included, and that there is a difference of 11 percent in the frequency with which the pottery types are represented in them. Since the collections are almost equal in size (307 and 313 sherds), and large enough to give a reasonably accurate result, there is only one explanation that seems to account for this discrepancy. The later of the two collections in the seriation was made in the 1870's while the earlier was made in 1950. It may be that the frequent looting to which Pacoval has

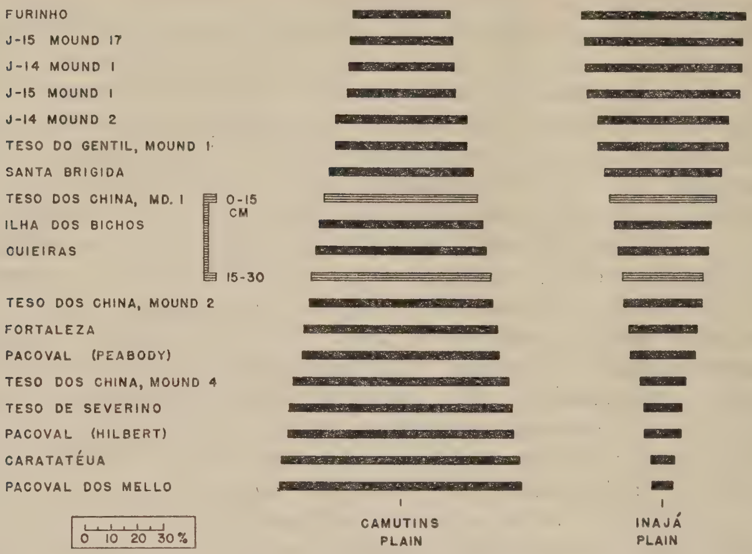

FIGURE 141.—Seriation of Marajoara Phase cemetery sites based on relative frequency of Inajá Plain and Camutins Plain (Appendix, table 41).

been subjected has removed a greater proportion of the material nearer the surface and what remains comes mostly from the lower levels. If this is the case, the two Pacoval collections should be interpreted as more comparable to stratigraphy than as representative surface samples in the usual sense.

If this plain-ware seriation of cemetery sites is compared with the stratigraphic results from the habitation mound of J–15, Mound 14, some conclusions can be drawn about the contemporaneity of Marajoara Phase sites. The changes that occur stratigraphically (fig. 139) correspond to the part of the seriated sequence (fig. 142) commencing with Cuieiras and continuing beyond the last cemetery site, Furinho. The J–15, Mound 14, stratigraphic sequence is approximately the same as the one derived from J–15, Mound 1, and its surface collection seriates like that of the latter site about the middle of the stratigraphic sequence. If the surface collections used for the other cemetery sites can be assumed to summarize a similar span of time, then it can be concluded that J–15 was a functioning community during about half of the Marajoara Phase occupation of Marajó Island, specifically, the latter half. The J–15 mounds were constructed during the second half of the period represented by Pacoval and Fortaleza, and the two groups of sites were contemporary for a short time. When the seriated sequence is considered in geographical terms, it is evident that the earlier sites are east of Rio Ararí and the later ones west of it.

This constitutes a movement from the open *campo* in the east to the forest and *campo* west of the Ararí. J–15 is at the margin between the *campo* and the solidly forested western part of Marajó Island.

The 16 habitation mounds of J–15 producing a sufficiently large surface sample were seriated on the possibility that this might show whether they were in use at the same time, or whether they represent successive house sites (fig. 142). The analysis produced a continuous variation between Mound 5 with 57 percent Inajá Plain and 37 percent Camutins Plain, and Mound 4 with 38 percent Inajá Plain and 60 percent Camutins Plain (Appendix, table 42). This seems to indicate that the mounds were generally contemporary and composed a village that stretched for several kilometers along the river bank. The higher numbered mounds, which are those toward the upper part of the Igarapé Camutins, tend to be in the lower half of the sequence, suggesting that they were abandoned slightly before those farther down stream. This is in accord with the seriated position of Cuieiras as the earliest of the Camutins cemeteries, since Cuieiras is not far above these habitation mounds.

A comparison of figure 139 with figure 140 reveals distinctly the basic difference between habitation and cemetery refuse. Decorated sherds account for not more than 8 percent of the domestic pottery in any one level, and J–15, Mound 14 produced only painted and incised types. In the cemetery cuts, decorated pottery is both more abundant and more varied in technique. Contrary to the impression given by previous ceramic collections, however, decorated types are in the minority even in cemetery sites. They comprise only 9 to 15 percent of the sample from the levels of J–15, Mound 17, cut 1, and 8 to 35 percent of that from J–15, Mound 1, cuts 1 to 3, with the majority of the levels producing about 25 percent decorated sherds. It is a rare level in which this is not composed of 50 percent or more Joanes Painted, which reduces the remaining 13 types to a very low frequency.

Since there appeared to be no association between decorative technique and paste characteristics except one reflecting the relative popularity of the plain wares at the time of manufacture, classification of decorated types was made purely on the basis of decorative technique. It was found that 7 types of decoration were employed in combination with one or more of 4 types of surface treatment, including 3 kinds of slip. Fourteen of the possible combinations were utilized, giving 14 decorated pottery types.

Joanes Painted includes all techniques of painted decoration, whether red-on-white, black-on-white, or red-and-black-on-white. In addition, any bowl sherd with a white-slipped interior or jar sherd with a white-slipped exterior was given this classification, even when no trace of paint remained. Although this may seem unwarranted,

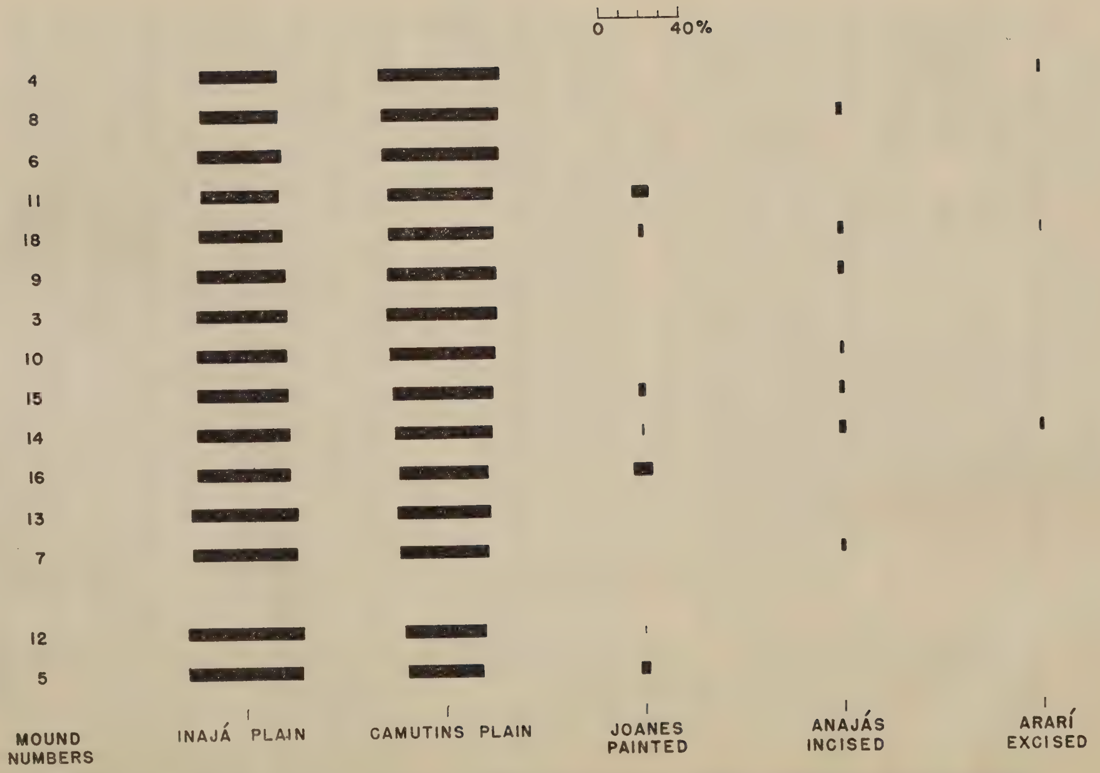

FIGURE 142.—Seriation of J–15 habitation mounds based on the relative frequency of Inajá Plain and Camutins Plain (Appendix, table 42).

experience derived from handling hundreds of decorated sherds indicates that white slip is almost universally, if not always, applied as a foundation for a painted design, and the majority of sherds where the paint is no longer visible have been subjected to erosion from exposure to rain and sun or to wet, clayey soil. The attempt was made to discriminate between monochrome and dichrome painting in the hope that some time difference would emerge, but so few sherds retained enough paint to permit classification that the attempt was abandoned as impractical and not likely to give reliable results because of the frequency of eroded surfaces.

Six of the decorated types utilize incision. Guajará Incised involves the use of two (occasionally three) parallel lines 1 to 5 mm. apart, made simultaneously with a double-pointed tool (pl. 71). The surface is always unslipped. In another distinct incised style, the surface is white-slipped and incised, and then certain of the incised lines are painted or "retouched" with red. Since this type occurs with greatest frequency at Pacoval, it has been called Pacoval Incised (pls. 77–78). The final incised category, Anajás Incised, includes all other designs produced by incision. There is great variation in motif, quality of execution, width and depth of the lines, etc., but no design subtypes are sufficiently distinctive to be easily recognized, as can be done with Guajará and Pacoval Incised. Subcategories that are significant from a time standpoint are those made on the basis of slip. This results in the breakdown into Anajás Plain Incised (pls. 51–52), Anajás Red Incised (pl. 53), Anajás White Incised (pls. 54–55), and Anajás Double-slipped Incised (pl. 50).

Another large and inclusive group is that containing the excised types. Since there is wide variation in the amount of surface cut out to produce the design, the term "excised" is used in preference to "champlevé." Not all excised sherds could validly be called champlevé, and since the same technique is involved no matter what percentage of the original surface is removed, all sherds on which excision occurs must be considered as fundamentally related (p. 325). The extremes of quality in execution in this category are great and easily distinguished, but when an attempt is made to subdivide on the basis of crudeness of workmanship or proportion of the area excised, the gradation is so complete that the residue of borderline examples of uncertain classification is larger than the distinctive, classifiable group. As was true with Anajás Incised, the most significant breakdown in the excised class is by slip, giving Ararí Plain Excised (pls. 57–58), Ararí Red Excised (pls. 59–62), Ararí White Excised, and Ararí Double-slipped Excised (pl. 56). In some red-slipped and excised examples, the cutout area has been filled with white, giving a further type, Ararí Red Excised, White-retouched (pl. 63).

Scraping as a method of decoration has been almost completely ignored by students of Marajoara ceramics, and it was somewhat of a surprise to find it not only present, but one of the more common techniques especially at the later sites. Most characteristically, it is used on the necks of jars as a quick method of relieving the monotony of the plain surface, and is done by combing or scraping vertically. This type has been called Goiapí Scraped (pl. 70).

The final basic group includes sherds that have a red slip but no incised, painted or excised decoration. Since the slip was apparently applied for ornamental effect, and since red-slipped vessels are associated with decorated wares in cemetery sites rather than with plain domestic wares, Carmelo Red has been included with the decorated wares.

Some idea of the relative frequency and temporal distribution of these decorated types can be gained from fig. 140. In order to magnify their very small percentages, the decorated types were plotted at twice the scale used for the plain wares. Some of the types are absent, and some of those present show no particular trend or change in frequency, notably Joanes Painted, Ararí Plain Excised, and Anajás Plain Incised. Ararí Red Excised undergoes a slight but steady decline. Anajás Double-slipped Incised seems to be early and Guajará Incised and Carmelo Red occur only in the upper half of the sequence. The remainder of the types have scattered distributions from which no definite conclusions can be drawn.

In spite of this relatively indistinct picture, certain trends in the employment of various techniques can be recognized. The rare, declining or absent types are Pacoval Incised, Ararí Red Excised, Ararí Red Excised White-retouched, Ararí White Excised, Ararí Double-slipped Excised, Anajás Red Incised, Anajás White Incised, and Anajás Double-slipped Incised. Those that are abundant or increasing are Ararí Plain Excised, Anajás Plain Incised, Guajará Incised, and Goiapí Scraped. The first group, which is on the decline, is composed of types where the surface is provided with one or two slips before the execution of the incised or excised design. In two cases, this is followed by a "retouch" of the incised or excised areas with a contrasting color. These complex and elaborate methods of decoration gradually lose ground to incised and excised designs applied to an unslipped surface. The late types that occur with the greatest frequency all share the characteristic of an unslipped surface and the use of a single step in producing the decoration, whether this is incision, excision, or scraping.

The time span represented by this cemetery and habitation stratigraphy is not sufficiently long to give a good picture of the trends in decoration during Marajoara history, and it became desirable to carry the sequence backward by the addition of collections from other Marajoara Phase sites. This meant utilizing surface collections that had been selected for decorated types. In order to compare the frequency of the decorated types, a method had to be found for eliminating the distortion that would result from the inclusion of varying amounts of plain sherds, which had no relation to the actual proportions at the site. This was done by considering the total number of decorated sherds as equal to 100 percent and eliminating plain sherds from the total and from the percentage calculation (Appendix, table 43). This method could be used for previous collections from only two cemeteries, Pacoval and Fortaleza, since the samples from others were too small to insure the inclusion of rare types that might have been present.

The collections from J–14, Mound 1 (Guajará), and J–15, Mound 1 (Camutins) were analyzed in the same way. When the 4 sites are placed in the temporal sequence indicated by the proportions of their plain wares (fig. 141), this enlargement of the time span (fig. 143) confirms and magnifies the trends revealed in the stratigraphy. The complex decorated wares that are rare or absent at J–14 and J–15 are frequent to abundant at the earlier cemeteries, while the simpler ones are less common. Although the graph does not show it, combinations of two or more techniques on a single vessel are also most frequent at the earlier sites. This partly accounts for the lesser percentage of Joanes Painted at Pacoval, where painted decoration frequently occurs on vessels bearing incised or excised designs on another surface and was somewhat concealed by the method of classification (see p. 325). Recognition of this leads to the conclusion that painted decoration is most common and best executed in the earlier part of the sequence.

Examination of the details of execution of the designs gives other evidence of decline in ceramic quality. Excision, for example, is markedly more evenly done on Ararí Red Excised than on Ararí Plain Excised. On the former, the cutout areas are typically sharply defined, with straight edges, and are evenly cut back and often striated. In Ararí Plain Excised, on the other hand, the excisions are gouged out so that the depth is uneven and the margins are ragged. This gradation in technique is a gradual one and there are instances of poorly done Ararí Red Excised, but they are less common than the well-made examples. Changes of this kind indicate the gradual replacement of painstaking work with a hurriedly made and inferior product.

An interesting substitution of techniques to achieve a similar effect with greater economy in time and labor is observable when Pacoval Incised is compared with certain Anajás White Incised specimens

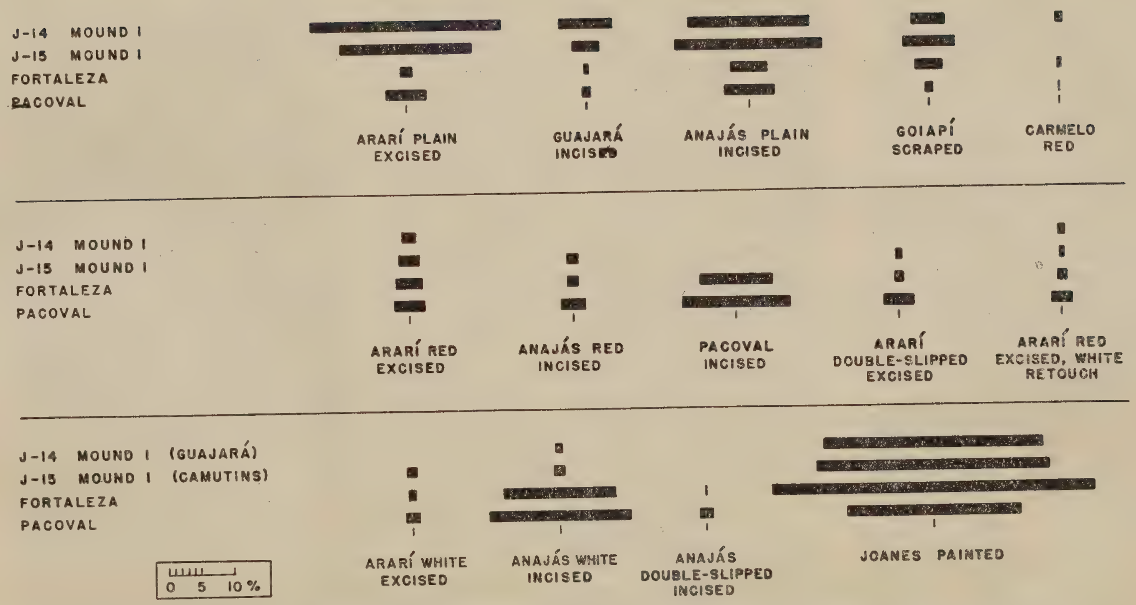

FIGURE 143.—Trends in Marajoara Phase decorated types revealed by the seriation of the four Marajoara Phase cemetery sites of Pacoval, Fortaleza, Camutins, and Guajará (Appendix, table 43).

(e. g., pl. 78, *c*, and pl. 55, *a*). In Pacoval Incised, the designs are typically composed of fine lines with broader ones added between them at intervals and colored red, producing an attractive contrast. The fine lines are generally employed in two's or three's to define rectangular or Z-shaped fields occupied by a single red-retouched line, or the two kinds of lines are combined in concentric spirals. These distinctive motifs carry on after Pacoval Incised has died out, the color contrast being preserved by the less time-consuming, but also less aesthetically effective device of cutting the single lines (formerly red-retouched) through the white slip to reveal the underlying orange surface. This variety of Anajás White Incised (which might occasionally be justifiably classified as Ararí White Excised) is prominent at Fortaleza and continues at Camutins. It is exceedingly rare at Pacoval, where Pacoval Incised was an important decorated type.

The major temporal changes in Marajoara Phase ceramic decoration can be summarized as follows:

1. Complex wares utilizing two or more types of surface treatment, such as slipping or double-slipping with excision or incision, and slipping with incision and painting, are most abundant at the earlier sites and decline markedly with the passage of time.
2. Concurrently, the technical quality of the excised designs and the amount of vessel surface that they cover is notably reduced.
3. The wares showing increases in popularity are with one exception unslipped, and the excised, incised, or scraped decoration is applied directly to the vessel surface. The exception is Carmelo Red, in which there is a red slip but no further decoration. In short, the types on the increase, are those that require the least time for their execution.
4. Painting is common in all periods, somewhat more so in the lower than in the upper part of the sequence represented here. There is some indication that complex and delicate designs are more frequent at the earlier sites.

One can discern the same tendency toward simplification when other features of the pottery besides surface treatment are examined (fig. 144). Hollow rims are frequent on Anajás White Incised and Pacoval Incised vessels from Pacoval, constituting 1.8 percent of the total classified sherds. There is only one example in the University Museum, Philadelphia, collection from Fortaleza, comprising 0.13 percent, and our excavations at J–14 and J–15 produced none (Appendix, table 44). Since the manufacture of hollow rims requires more technical skill than the making of solid ones, the loss of this trait can be interpreted as indicating a decrease in that skill.

Anthropomorphic and zoomorphic rim adornos occur with vastly greater frequency at Pacoval than at any of the other three cemetery sites, although they do not die out completely as do the hollow rims. Geometric rim adornos maintain a more even popularity, and this seems to be true also of applique body adornos, although the evidence

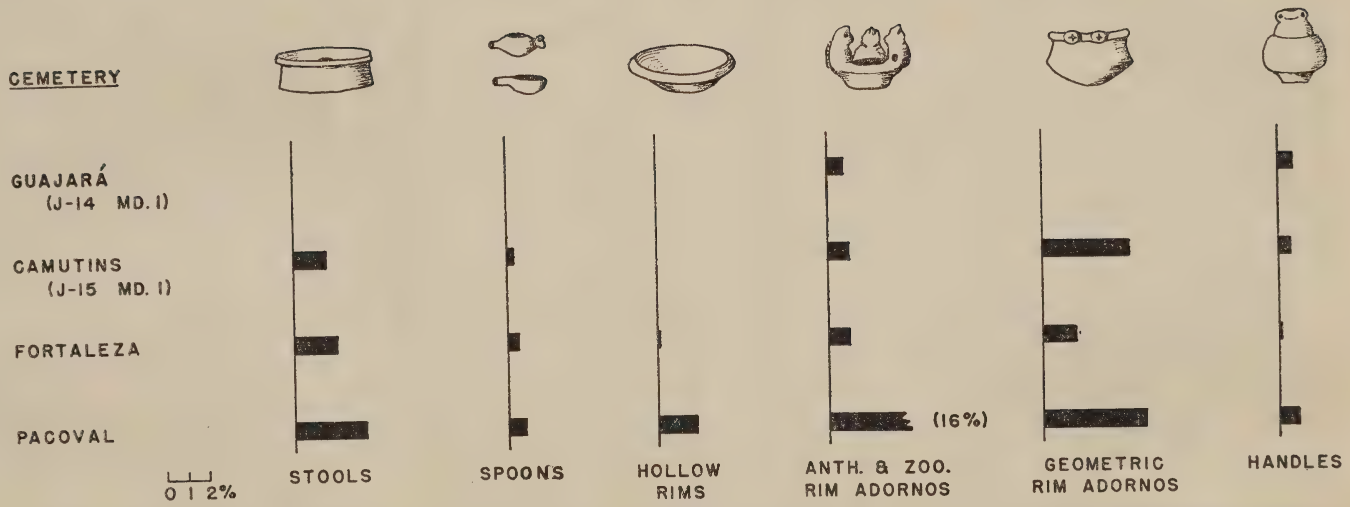

FIGURE 144.—Trends in unusual pottery artifacts and adornos of the Marajoara Phase shown by comparing the cemetery sites of Pacoval, Fortaleza, Camutins, and Guajará (Appendix, table 44).

is not complete. The latter constitute 1 percent of the total at Pacoval and 1.2 percent at J–15, Mound 1, with no figures available for Fortaleza and J–14, Mound 1.

Handles, which never reach a frequency of 1 percent on the utility wares, also remain approximately constant, ranging from 0.8 percent at Pacoval to 0.7 percent at J–14, Mound 1.

When we consider trends in vessel shape, the analysis is complicated by deficiencies in the data. Rim sherds were too infrequent in the stratigraphic excavations to permit a statistical analysis by levels (Appendix, tables 45–47). The J–14 and J–15 sites are too nearly contemporary to exhibit any significant differences when their total samples are compared and there are no data from Pacoval and Fortaleza. There are two other means, however, that can be used to investigate possible temporal differences. One of these is the burial stratigraphy revealed in J–14, Mound 1, cut 1 and the other is based on the temporal position of the decorated pottery types.

Taking the latter evidence first, we can make a temporal classification between pottery types that tend to be early and those whose main distribution is late. The first group includes Ararí Red Excised, Ararí Red Excised White-retouched, Ararí White Excised, Ararí Double-slipped Excised, Anajás White Incised, Anajás Double-slipped Incised, and Pacoval Incised, while the second is represented by Ararí Plain Excised, Anajás Plain Incised, Guajará Incised, and Goiapí Scraped. When the vessel shapes associated with these two groups are contrasted, it is evident that the early types exhibit shapes that are not found with the late types. These include cylindrical and semicylindrical jars (Ararí Red Excised White-retouched, common shape 6), jars with a flat bottom and concave outsloping lower wall (Pacoval Incised, common shapes 7, 9, 11), jars with globular body and tall cylindrical neck (Pacoval Incised, common shape 8); flat-bottomed bowls (Pacoval Incised, common shape 4); bowls with hollow rim (Pacoval Incised, common shape 1); and bowls with broad, horizontal rim (Pacoval Incised, common shape 6). None of these shapes occurs characteristically with the late decorated types, and most of them do not occur at all. Late shapes are less varied and simpler. Jars tend to be globular bodied with a short vertical or slightly concave neck (Goiapí Scraped, common shape 1) and bowls are rounded (Anajás Plain Incised, common shapes 1 and 2). Along with this decrease in variety of shapes, appears to go a decrease in size, especially of jars.

This general size decrease is shown stratigraphically in J–14, Mound 1, cut 1 (fig. 89). The deepest, and therefore the earliest, burial jars are considerably larger than those that were buried afterward. This size decrease is not necessarily related to the change in the method of disposal of the dead, since secondary burial does not require much more jar space than cremation.

The decreasing frequency of some of the ceramic artifacts further attests to the diminishing richness of the culture (fig. 144). Stools decline both in relative frequency and in the variety of surface decoration applied to them. At Pacoval they constitute 3.3 percent of the sample and may be Inajá or Camutins Plain, or Anajás Plain Incised, Anajás White Incised, Ararí Plain Excised, Ararí Red Excised, or Ararí Double-slipped Incised. At Fortaleza the frequency drops to 2 percent and decorated types include Anajás Plain Incised, Anajás Red Incised, Anajás White Incised, and Ararí Plain Excised. At J–15, Mound 1, the occurrence is 1.5 percent and all are undecorated except for one Anajás Plain Incised. No stools were found at J–14, Mound 1.

The little stemmed vessels here identified as spoons decline from 0.8 percent to 0.5 percent to 0.3 percent to 0 in the sequence represented by the four cemeteries. Spindle whorls alter from biconical or spoolshape with incised decoration to a simple, flat, plain or punctated disk.

DIAGNOSTIC FEATURES OF THE MARAJOARA PHASE

The Marajoara Phase has a compact distribution on Marajó Island. A circle described on the map with a compass, its point set at Pacoval in Lago Ararí and its radius measured to the north coast, would include all of the recorded sites (fig. 145). The explanation lies in the fact that such a circle coincides approximately with the boundaries of the *campo*, the habitat the Marajoara people preferred. The largest concentration of sites is east of Lago Ararí, where the *campo* is most open and unbroken by trees. They are typically on the shores of streams or lakes, circular, oval or long and narrow in outline and with no consistent orientation other than that dictated by the exigencies of the immediate location (a curve in the river, a spring, etc.). There is no evidence of any intention to reproduce a zoomorphic shape, as has been suggested by some of the earlier writers.

The 1949 excavations do not support the interpretation that the same mound was used both for habitation and for burial. Rather, separate mounds were constructed for each purpose and are easily distinguishable by their contents and usually also by their size. The habitation mounds are comparatively small and low: the largest of the Camutins group (J–15, Mound 14) is 51 meters long, 35 meters wide, and 6.25 meters high; the largest of the Fortaleza group is 91 meters long and 2 meters high (although one with less area is 3.5 meters high). Sherds are sparse and 92 to 100 percent of these represent the undecorated, utilitarian wares, Inajá and Camutins Plain.

There are some indications of house type. The stratigraphic pit in the habitation mound, J–15, Mound 14, showed an alternation between layers of fire-burnt orange dirt containing relatively abundant sherds, and light-grayish or whitish soil with sherds sparse except immediately above the preceding burnt-orange layer (fig. 106; cf. Farabee's results at Fortaleza). It was not possible to enlarge the excavation so as to determine the horizontal extent of the orange areas, but the irregular thickness of the bands and the presence of a small pocket of similar character near the bottom of the cut may indicate that they are not strata extending over the entire mound. These fire-burnt layers, the ash pockets and the quantity of dirt mixed with the sherds are in marked contrast with the refuse conditions of other Phases on Marajó Island, and must be correlated with a difference in house construction.

All the mounds that were tested had a core of whitish clay, sometimes flecked with gray and orange, that contained no cultural refuse. This foundation was of varying size, but always sufficient to put the surface above the level of high water. It represents the basic construction, prior to the use of the mound as a habitation or cemetery. The remainder of the dirt was added while the mound was in use and at J–15, Mound 14 it increased the height by slightly more than 2 meters. The burnt soil, the sparsity of sherds, and the periodic addition of new layers of clean dirt can all be explained if it is assumed that the Marajoara Phase used a dirt-floored house instead of a pile dwelling. Sherds and other refuse would then be swept out or dumped over the edge of the mound. The customary use of the same dump would explain the greater accumulation of sherds sometimes found on one slope. The fire-burnt areas may represent the hearth or series of hearths down the center of the house and the periodic sterile layers, a renewing of the floor. The relatively small area available on the summit seems to favor the use of communal rather than individual family houses, which would make less effective use of the limited space. The very fact that time and effort were spent in the construction of mounds argues strongly for the view that the people were accustomed to dirt-floored houses and, finding Marajó Island too low and wet for them, preferred to alter the terrain rather than to modify their house type. The alternative explanation is that the Marajoara people brought the trait of mound building with them to the island.

Each group of habitation mounds has associated with it at least one cemetery mound. This can often be identified immediately on the basis of its greater size alone. The maximum dimensions thus far recorded are from J–15, Mound 1 (Camutins), which is 255 meters long, 30 meters wide, and 10 meters in maximum height at highest water level. The cemetery of the Fortaleza group (Mound 7) is 183 meters long, 68 meters wide, and 3.5 meters high. J–14, Mound 2 (Monte Carmelo) is considerably smaller, being only 85 meters long. It is possible that isolated cemeteries exist in addition to those belonging to the village complexes. Pacoval may be such a case, since none of its numerous visitors have ever mentioned seeing other mounds in the immediate vicinity. However, this cannot be stated without reservation until more adequate information is available on a larger number of the cemetery sites. The cemetery mounds show the same type of foundation as the habitation sites, and seem to have been added to as the need arose for more burial space.

The history of the burial practices of the Marajoara Phase is incomplete, and the lack of scientific training on the part of the earlier investigators makes the reliability of some of the existing evidence subject to reservation. The earliest site from which reports are available is Pacoval. Here Derby (1885, pp. 22–23) found secondary burial in jars covered with lids. Vessels were sometimes superimposed, and occasionally one was inside another. Tangas were associated. Ferreira Penna (1879 a, pp. 52–53) also noted superimposition of jars but found no lids. He attributed the absence of skeletal remains to the practice of cremation (op. cit., p. 61). Hartt (1871, p. 263) observed cremation in some of the smaller jars and thought he could detect instances in secondary burials where some of the articulations had been intact at the time of burial. Netto (1885, p. 427) noted that cremation was present but unusual. At Fortaleza, Farabee (1915) found both cremation and secondary burial, but he does not say whether there was any stratigraphic distinction between these two types of disposal of the dead. Tangas were associated, occurring sometimes inside and sometimes outside the jar. The burials appeared to be grouped, with areas containing no jars separating the groups. At the Camutins, Farabee (1921, p. 148) claims to have detected primary burial in some of the large jars he excavated from Mound 17. Hilbert (1952, p. 18), who excavated in some of the cemeteries on the upper part of the Igarapé Camutins, reports no cremation and tangas rarely associated with the secondary burials.

This seemingly confused burial pattern has two possible explanations: (1) an alteration through time and (2) a differential treatment of individuals of different social status. The burial stratigraphy of J–14, Mound 1 (Guajará), cut 1 indicates that both possibilities may be involved. The oldest burials in this cemetery are in large plain, painted or excised jars covered with a plain or excised, basin-shaped or carinated bowl, inverted or set upright in the jar neck. A tanga was placed inside with the bones, some of which show traces of red paint. Bowls associated with some of the jars may have contained food offerings. The presence of mammal, bird, and crocodilian bones adds strength to this interpretation. Cremation displaces secondary burial as the dominant practice in the latter part of the stratigraphic sequence. The jars are smaller and less ornate than those used for secondary burial, and tangas are never associated. The bowl cover remains similar in shape, but is smaller than in earlier times and typically fits over rather than inside the jar rim. This decrease in size and elaborateness of the jars and alteration from secondary burial to cremation is also attested in Farabee's data from J–15, Mound 17 and in our excavations at J–15, Mound 1.

In the lower levels of the excavation, one burial stood out from the others by its greater elaborateness. This consisted of jar L, a polychrome, anthropomorphic jar, which was flanked at each side by equally large but plain jars containing the skeletons of several individuals, tangas, and in one, two small bowls. The fact that all three jars were interred at the same time, and the contrast between the elaborateness of the central jar with its single occupant and the plainness of the flanking jars with their multiple skeletons seem to indicate that some person of outstanding importance was involved. At the opposite extreme were individuals buried without even a funerary jar, but often with an associated tanga. Since these differences in burial pattern, ranging from no urn, through plain urns to elaborately painted urns buried in association with simpler vessels, are contemporary alternatives, they must reflect differential treatment of the dead based on distinctions of class or rank. While the burial of wives or servants with a deceased person of rank is a practice frequently encountered in primary burials in other cultures, it seems somewhat remarkable in secondary burial, where the bodies must be kept intact and separate through several steps before their final disposition in the urns in the form of skeletal remains. The same is true of the animal and bird bones. The fact that red pigment occurs on all of these leaves no doubt as to the secondary nature of the burials.

The quantity of sherds from ceramic vessels of all types, both plain and decorated, the great number of broken tangas and stools, and the presence of areas of orange, fire-burnt earth suggest that the cemeteries were the scene of some sort of elaborate ceremonial. It may be that the funerals were occasions of great significance or that there were periodic observances in honor of the dead at which offerings were made. Another interesting possibility is suggested by a practice observed by Linné among the Cuna of Panama, who place the same kinds of objects at graves as did the Marajoara. Among the Cuna, small huts were erected over the graves (in which the dead were interred wrapped in a hammock) and furnished with domestic utensils. One hut, for example, contained "10 large and 12 small footstools, 6 braziers, and a box containing cups, saucers and spoons" (Linné, 1929, p. 248). The explanation was that "the footstools had been supplied in order that the spirits of the dead would have something to sit upon when they came on a visit to the spot, and the crockery, etc., was there for them to use at their meals" (ibid.). The existence of such a concept among the Marajoara would account not only for the abundance of vessel fragments at the cemetery sites, but also for the fact that the vast majority of the stools are found there rather than in the habitation sites where they might logically be expected if they were made primarily for everyday use.

As far as the physical appearance of the Marajoara people is concerned, we know only that they practiced frontal deformation of the skull, and probably perforated the ear lobe and perhaps the lower lip for the insertion of ornaments.

The ceramics of the Marajoara Phase have been divided into two plain wares and 7 major types of decoration. Contrary to the impression gained from museum collections, Inajá Plain (with a gray core) and Camutins Plain (completely oxidized) comprise the great majority of the ceramics, not only at habitations but also at cemeteries. The gradual displacement of Inajá Plain by Camutins Plain shown in the stratigraphic excavations provides one basis for determining the relative antiquity of Marajoara sites.

The primary categories of surface treatment—excision, three distinctive types of incised design, scraping, painting, and red slipping—were subdivided into types based on their combination with alternative types of slipping (red, white, red-over-white, and none). For example, excision occurs in the following variations: Ararí Plain Excised, Ararí Red Excised, Ararí White Excised, Ararí Double-slipped Excised and Ararí Red Excised, White-retouched. It was found that the more complex types, combining one or more slips with incised or excised decoration, were most abundant and best made in the early part of the Phase. As time passed, they were gradually superseded by simpler types like Goiapí Scraped, Guajará Incised, Anajás Plain Incised, and Ararí Plain Excised. There is no evidence that any of the alterations in Marajoara culture were the result of outside interference.

Characteristic objects of Marajoara manufacture, in addition to the utilitarian and ceremonial pottery, are round and oval ceramic stools; stylized, seated, anthropomorphic figurines; red-slipped or red-on-white tangas; small, spool-shaped ear plugs; labrets (rare); round to spool-shaped spindle whorls; shallow or deep spoon or ladle bowls with perforated stem for attachment to a wooden handle; and whistles capable of 2 to 4 tones (rare).

This evidence of mound building, burial pattern with differential treatment of the dead, and an elaborate type of pottery during the first half of the Marajoara Phase carries with it certain implications regarding the level of sociopolitical development attained by this Phase. Differential treatment of the dead is typically associated with differences in rank if not class. The construction of large-scale earth works indicates planning, organization, leadership, and the existence of a labor supply for activities other than food gathering. Occupational division of labor is further attested by the elaborate and complex ceramic art.

Pottery provides the bulk of the evidence for the conclusion that the Marajoara Phase is a culture with advanced sociopolitical features. The pottery of the living Tropical Forest peoples and of the Tropical Forest archeological Phases on Marajó Island is simple and predominantly utilitarian. It is also unstandardized, so that every rim is slightly different in contour and there is a wide variation in vessel size. This is the effect produced when every woman is her own potter. Although there is general conformity to the ceramic tradition of the group, there are as many opportunities for variation as there are potters. The effects of this individuality are readily apparent to the archeologist, who finds instead of the relatively restricted and uniform number of vessel and rim shapes produced by advanced cultures like the Andean ones, an infinite variation that makes classification exceedingly difficult.

This is not true of Marajoara Phase pottery, however. The utilitarian bowls and jars exhibit marked uniformity in both rim shape and diameter. It is probable that this standardization is the effect of ceramic making having become a specialized occupation; when the number of potters is reduced, the variability in the product should also become less. The elaborate ceremonial wares further support the conclusion that the ceramics were manufactured by specialists. The technical competence indicated by the shaping and firing, and the skill exhibited in the application of intricate and extensive excised designs could not have been gained by sporadic, part-time application to the craft. It is not equaled or even approached in any of the Tropical Forest Phases where such was the case. In addition to complexity, the Marajoara Phase decorated wares present significant examples of uniformity, in which an elaborately painted or excised vessel will be duplicated one or more times. The copies are not identical but resemble one another closely (e. g., pl. 61).

A final point of evidence in support of the specialized production of decorated wares comes in the decline in excellence and elaborateness shown by these wares during Marajoara Phase history. Repeated treatment of the surface of a single vessel with several slips, followed by excised or incised and retouched designs degenerates into the use of slipping, incision or excision separately for embellishment, with the lines less carefully drawn. If increased complexity is correlated with increased skill derived from increased specialization, then the reverse trend must be the result of loss of specialization.

The archeological evidence interpreted in the light of what is known of living and historical cultures, leads unavoidably to the conclusion that Marajoara culture had sociopolitical features more closely resembling those of Circum-Caribbean or Sub-Andean cultures than those of the Tropical Forest. Resemblances can also be discerned in the realm in material culture (see pp. 412 ff.). The fate of this culture on Marajó Island further reveals its non-Tropical Forest nature. All the evidence that can be derived from the pottery including technological competence, variety of vessel shapes, quality and elaboration of decorative styles, reveals a decline or degeneration from complex to simple, and suggests the disappearance of pottery making as a specialized occupation. Although a single stratigraphic excavation may not be sufficient basis for an unequivocal statement that differentiation in rank or class also was on the wane, some such explanation must account for the relative simplicity and uniformity of the burial vessels in the upper levels as opposed to the variety of burial situations in the lower levels of J–14, Mound 1, cut 1. The Marajoara Phase came to Marajó Island with an advanced culture, which could not be maintained in the new environment. The result was a gradual, but constant decline. It is interesting to note that some of the earliest investigators reached this same conclusion about Marajoara culture (Ferreira Penna, 1879 a, p. 53; Netto, 1885, p. 265).

The duration of the Marajoara Phase cannot be estimated accurately at the present time. That it was extinct before the arrival of the Europeans at the mouth of the Amazon shortly after A. D. 1500 is evident both from the seriated position of the Phase in the archeological sequence on Marajó Island and from the absence of any European trade material in all the known sites. In 1878, Barbosa Rodrigues (1876–78, p. 20), estimated that the minimum age of some of the large trees growing on the mounds was 500 years, which would place their abandonment before A. D. 1375.

CONCLUSIONS AND INTERPRETATIONS

Although archeological information is lacking on the Tropical Forest archeological Phases over a large part of Marajó, a summary of the sequence of cultures can be given, provided it is recognized as applying specifically to the central and north-central parts of the island and as tentative for the remainder.

As would be expected under tropical forest conditions, no positive evidence was found of a preceramic horizon. Shell mounds are said to exist on the Rio Ararí and at Tapera east of Lago Ararí (Lage, 1944, pp. 220–221), but lack of investigation makes it impossible to say whether they are of natural or human origin. In view of the antiquity of man in South America, and of the relative lateness of the ceramic cultures in the mouth of the Amazon, however, it seems highly probable that hunting and gathering groups inhabited Marajó Island for a considerable period of time. Since all that remains for the later groups are the fragments of ceramics and a few stone artifacts, there is no likelihood that anything specific will ever be known of these earlier peoples. One might hazard a guess that they did not differ notably from surviving food gatherers in the Tropical Forest area.

The earliest ceramic culture so far discovered on Marajó Island is the Ananatuba Phase. It appears first at a site on the north-central coast (J–9—Ananatuba), but the good quality of the pottery rules out the possibility that this represents a local invention of pottery making or even the local origin of the Phase. The density of the sherd refuse and the depth of the deposits indicate a considerable duration for the Ananatuba Phase, during which time it came to occupy a roughly triangular area between the coast on the north, the unbroken forest on the west and the Lago Ararí on the east (fig. 145). This area is characterized by patches of *campo* interspersed with fingers and "islands" of forest of varying extent, and since the Phase appears to be adjusted to this ecological situation, it seems unlikely that further investigation will produce many sites in the more open *campo* to the east of this lake or in the continuously forested regions to the south and west.

Ceramically, the most distinctive feature of the Ananatuba Phase is the decorated ware, Sipó Incised. It is present from the beginning, and although only J–7—Sipó produced examples of all seven of the design types, the more complex ones occur at the earlier sites, indicating a minimum of local evolution. The technique of ornamentation by brushing the surface with a bunch of sticks or a similar tool also makes its appearance at the beginning of the Ananatuba Phase and Carmo Brushed accounts for the major portion of the decorated sherds.

The origin of the Ananatuba Phase is unknown. There is no evidence to warrant the conclusion that it developed on Marajó Island and it is probably intrusive. The question "From where?" can only be given negative answers at present. No sites of this Phase were found on the islands of Caviana or Mexiana, or in the Territory of Amapá. Sherds collected along the main course of the lower Amazon do not particularly resemble Sipó Incised, although they do consist of simple, incised designs. No brushed sherds seem to have been collected from the Amazon area, if they exist.

Although the origin of the Ananatuba Phase is problematical, its termination can be equated with the expansion of a second ceramic

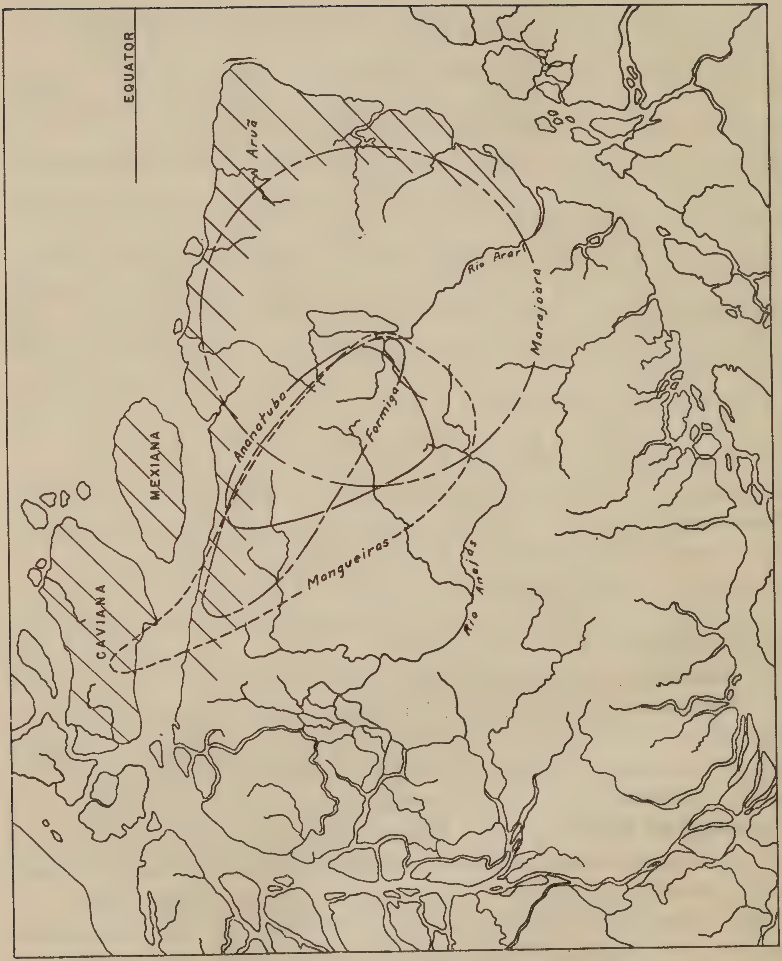
EQUATOR
Aruã
Rio Arari
Marajoara
Ananatuba
Formiga
MEXIANA
CAVIANA
Mangueiras
Rio Anajás

FIGURE 145.—Distribution of the various archeological Phases on Marajó Island.

culture, the Mangueiras Phase. The earliest site of this Phase is also on the north coast of Marajó, but farther west than the known Ananatuba Phase area of distribution. It too appears fully developed, and at the height of its ceramic quality. After gaining a foothold, the Mangueiras Phase expanded briefly northward to Caviana and more successfully southeast to overlap the region previously occupied by the Ananatuba Phase (fig. 145). This expansion took place at the beginning of the second period at J–7—Sipó when the ceramic evidence shows that this Ananatuba Phase village was conquered by the Mangueiras Phase, whose ceramic tradition becomes increasingly dominant with the dying out of the last potters of the Ananatuba Phase. Although this event brought the latter Phase to a close, its influence continues to be evident on the ceramics of the succeeding Phases. The Mangueiras Phase adopted the motifs characteristic of Sipó Incised and used them to decorate its own ceramics. In order to emphasize this affiliation, but to indicate at the same time that the plain ware differs, the Mangueiras Phase occurrence of these incised motifs has been designated as "Pseudo-Sipó Incised." Other Ananatuba Phase ceramic traits were also taken over by the conquerors, including brushing, the ornamental use of unsmoothed coils on the exterior of jar necks, and several vessel shapes.

In tracing the source and affiliations of the Mangueiras Phase, we are faced with the problem of determining first of all what constitutes the basic ceramic character of the Phase. Most of the distinctive features that appear in the pottery of the earliest sites on Marajó and southern Caviana—scraping, incision, excision and corrugation—seem to reflect influence from the Acauan Phase where these techniques and design motifs were more highly developed. Unless this contact between the two Phases occurred prior to their arrival at the mouth of the Amazon (which does not seem likely), these features cannot be used to trace the prior history of the Mangueiras Phase. Stripped of these influences, the ceramic evidence is not particularly distinctive. Decoration by brushing with a bunch of twigs or by applying a film of red pigment on one surface of a vessel is not unusual enough to remove the possibility of independent invention should one or both be found elsewhere. Of more potential value in tracing affiliations are the tubular pipes and collar-button type labrets from early Mangueiras Phase sites. These ceramic objects occur in none of the other Phases in the sequence at the mouth of the Amazon and may aid in determining Mangueiras Phase affiliations when the archeology of the lower Amazon area becomes better known.

An interesting aspect of the Mangueiras Phase history on Marajó Island is the receptivity of this culture to ceramic influences. Two independent instances can be demonstrated during the relatively short duration of the Phase on the island. The first source of inspiration was the Acauan Phase, with which friendly relations apparently existed.[29a] Through this contact, the Mangueiras Phase potters were exposed to a variety of decorative techniques, some of the simpler of which they copied. Ceramic evidence in the form of better quality of the ware, greater uniformity in vessel shape, and abundance, complexity, and standardization in decoration makes it seem probable that the Acauan Phase represents a culture somewhat more advanced than the general Tropical Forest level to which the Mangueiras Phase belongs. Since the present site inventory suggests that the Mangueiras Phase was numerically dominant, it may have been respect engendered by this cultural superiority that saved the Acauan Phase from the fate suffered by the Ananatuba Phase, the next alien culture with which the Mangueiras Phase came into close contact.

The Mangueiras Phase conquest of the village at J-7—Sipó was followed by the gradual assimilation of the vanquished group, the Ananatuba Phase. This interpretation is warranted by the stratigraphic evidence, which records the gradual disappearance of Ananatuba Phase types of pottery (fig. 56). It is interesting to note, however, that the artistic merits of the latter were not lost on the conquerors and the seriation chart shows two innovations in pottery decoration dating from this period (fig. 72). Brushing (Croarí Brushed) and the decorative influences derived from the Acauan Phase had died out soon after the source of the stimulation was removed. Contact with the Ananatuba Phase, where brushing (Carmo Brushed) represented a major decorative technique, caused a revival of this technique (Bacurí Brushed), and it not only regained but greatly exceeded its original popularity. The second innovation, the copying of Sipó Incised, is one that the Mangueiras Phase potters apparently required more time to master, since it took them longer to adopt this than the brushing. However, their predilection for these incised designs must be the explanation for the unusually high percentage of Sipó Incised in the pottery of Ananatuba Phase manufacture after the Mangueiras Phase occupation of J-7—Sipó.

The ultimate fate of the Mangueiras Phase is uncertain[30] and the stratigraphic connection between it and the succeeding archeological horizon was not found during the 1948-49 investigations. By the time of the abandonment of the latest site, J-13—Bacurí, the decorated wares had largely been lost, and this simplification of the ceramics may indicate that the culture in general was on the decline. In spite of the absence of a ceramic link of the sort connecting the other Phases, several considerations make it unlikely that a gap exists between the end of the Mangueiras Phase and the inception of the following Formiga Phase. Predominant among these is the presence in the latter Phase of a type of Pseudo-Sipó Incised, which differs from the Mangueiras Phase ware of the same name only in that the Sipó Incised motifs occur on the plain ware of the Formiga Phase. The motifs are unquestionably of Ananatuba Phase derivation and could only have been acquired by contact with either the Ananatuba or the Mangueiras Phase. Brushing, another Formiga Phase decorative technique, is likely to be of similar derivation in view of its long history in the two preceding Phases.

[29a] One Acauan Phase site, J-12—Jurupucú is on north Marajó; the others are on Mexiana Island.

[30] More detailed analysis has shown that what seemed to be the contact and assimilation by the Formiga Phase, mentioned in the preliminary report (Evans and Meggers, 1950, p. 4) was in error.

Complete contemporaneity between the Formiga Phase and either of the other two Phases, on the other hand, is ruled out by the coincidence of their geographical distributions (fig. 145). That of the Formiga Phase, as it is now known, extends from the vicinity of Chaves, on the north coast of Marajó, to the southwestern edge of Lago Ararí and overlaps a large portion of both the Mangueiras and Ananatuba Phase territories. The Formiga Phase site of J–18—Coroca is only one km. from the Mangueiras Phase site of J–17—Flor do Anajás and 2 km. from the Ananatuba Phase site, J–19, on the Rio Anajasinho. A similar degree of geographical proximity exists between J–6 and J–7 in the north, and it seems most unlikely that these Phases could have existed simultaneously in such a limited area and have retained their individual integrity so completely. It is more reasonable to assume that the Mangueiras Phase had withdrawn to J–13—Bacurí by the time the Formiga Phase began to occupy J–6, somewhat to the east. J–18—Coroca, which is later, would then have been settled after the abandonment of the nearby sites belonging to the other and earlier Phases. By the time of the Formiga Phase penetration west to J–4—Mucajá, it can be postulated that J–13, which intervenes geographically between J–6 and J–4, had been abandoned by the Mangueiras Phase.

During the latter portion of the Formiga Phase, beginning with the settlement of J–4, a foreign influence is demonstrated by the sudden introduction of a new decorative technique, namely, corrugation of the exterior vessel surface. The possibility of this being an indigenous development is excluded by the suddenness and strength of the initial appearance (fig. 85). Since this took place at J–4 it is probable that, in moving west, the Formiga Phase came into close contact for the first time with a group that was characterized ceramically by the use of corrugation. Perhaps the competition engendered by too close proximity was what caused the withdrawal from J–4 after an unusually short period of occupancy. At any rate, the former inhabitants of J–4 apparently introduced corrugation to their fellow tribesmen at

J–6, for the technique appears there immediately afterward.[31] This corrugation (Mucajá Corrugated), which is more accurately described as pinching of the surface than as true corrugation, did not take a hold among the ceramicists at J–6 and gradually faded out.

The termination of the Formiga Phase is brought about by the advent of the Marajoara Phase. The upper two levels of the cuts in J–6, Mounds 1 and 2, produced Marajoara Phase decorated sherds from vessels secured by trade. The alternative possibility, that they were picked up from an abandoned Marajoara Phase site, would not explain why these specimens appeared here in the north, where there are no nearby Marajoara Phase sites rather than at J–18—Coroca, which is in the center of the mound area.

A plain ware, tentatively called Catarina Plain (p. 227), makes an approximately contemporaneous appearance with these Marajoara Phase decorated wares and, although the exceedingly poor condition of preservation makes positive identification impossible, it seems likely that this is nothing more than Inajá Plain, also of Marajoara Phase origin. The peculiar, "variegated," gray and gold appearance of the paste is duplicated in some of the Inajá Plain examples from Fortaleza, which seriates early in the Marajoara Phase sequence.

On the Island of Marajó, Marajoara culture has an approximately circular area of distribution centering on Lago Ararí (fig. 145). The greatest concentration of sites, according to present indications, is east of the lake, where the *campo* is most open. Of the 28 cemeteries that have been recorded only four are represented by ceramic collections that are sufficiently large and unselected to permit a detailed analysis of the pottery types. These are J–14, Mound 1; J–15, Mound 1; Pacoval; and Fortaleza. The classification and subsequent seriation of the decorated wares from these sites (fig. 143) shows that Pacoval and Fortaleza are somewhat earlier than the western mounds and exhibit a number of ceramic refinements later lost, such as hollow rims, excision on a double slip, and retouching incised lines with red. Along with ceramic changes there appear to have been alternations of other parts of the culture. Burial stratigraphy at J–14, Mound 1, indicates that secondary urn burial associated with tangas gives way to cremation, with which no tangas are found. The decline in the frequency of clay stools in the cemeteries must be correlated with the dying out of the practice or belief of which they are the material expression.

The archeological evidence that this culture was at its peak at the earlier sites on the Island of Marajó, and that its local history was one of decline is one indication of its intrusive nature. Another is the general level of development, both material and sociopolitical, which is far above that manifested by the preceding and subsequent cultures in the area. Ecological considerations obviate the possibility that such a level of complexity could have been attained in the local type of tropical forest environment and point to a deviation from a more temperate or highland region (pp. 26–32). This conclusion can be tested by using the comparative method and it is fortunate that the greater complexity of Marajoara Phase culture and the presence of certain unusual ceramic traits permit a more extensive application of this approach than is possible with the other archeological Phases on Marajó Island.

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[31] Note that the seemingly earlier appearance lower down on the chart (fig. 85) is actually immediately beneath the later ones in location in the ground, and was probably on the top and later than the general average of the level in which it occurs.

The numerous students of Marajoara culture who have ventured to put in print their theories of the derivation of the people who were responsible for the impressive mounds and remarkable ceramics have one thing in common: with rare exceptions, none of them have considered the culture to be indigenous to Marajó Island. Lisle du Dreneuc (1889, p. 19), has proposed an origin as far afield as Egypt, brought through the intermediary of the Phoenicians, well-known mariners, and colonists of the Old World. Barbosa Rodrigues (1876–78, p. 7) suggested that:

> The similarities resulting from the comparison of the Brazilian and North American burial mounds, compared with the customs of ancient Scandinavia, provides proof of the influence that the Viking homeland had on the inhabitants of the New World.

Without venturing to trace the mound-building trait to the Old World, others have suggested that its presence in the eastern United States and on Marajó Island, together with several similar ceramic features of the two regions, may be indicative of a common origin for the Marajoara Phase and the Mississippi Mound-builders (Netto, 1885, p. 419; Palmatary, 1950, p. 347). It has also been pointed out that there are links with the upper Amazon, Venezuela, Colombia, and Central America (Cruls, 1944, p. 169; Lothrop, 1942, pp. 253–255). A more specific source in the Peruvian Andes has been proposed because of the quality of the modeled and painted pottery and of the great attention given the dead there as on Marajó (Netto in Tocantins, 1876, p. 63; Tocantins, op. cit.). Any such affiliation, however, is vehemently denied by Barbosa Rodrigues (1876–78, p. 14), who asks:

> Where does the use of burial mounds occur in Peru? Where are the burial urns? There is no material evidence that justified [the choice of] the Andean civilization, just as history does not come out in support of it.

Among living tribes, attention has most frequently been called to the Panoan groups of the Peruvian Montaña, who decorate their pottery with black, red, or black-and-red, rectilinear designs that have an impressionistic resemblance to the Marajoara painted style.

Kroeber has proposed that this may indicate a modern survival of the Marajoara style (1949, pp. 486, 488, 490).

All of these theories have been developed by using the comparative method, with greater or less judgment, discrimination and understanding of the limitations involved in the use of this technique of making correlations. Marajoara culture has never been found in its typical form outside the mouth of the Amazon and it is this situation that makes for almost free-for-all conditions on the question of affiliation. Many of the characteristic traits (e. g., urn burial, mounds, excision, etc.) have distributions that do not coincide and it becomes a question of deciding which should be given the greatest weight, or is the most unique and therefore the least susceptible to independent invention. This leads to dangerous ground, because it seems possible that mounds, which have been used as one of the diagnostic traits, may not be a primary component but instead are a secondary adjustment to the environmental conditions on the Island of Marajó. However, the comparative method is the only approach available in the present state of our knowledge of South American archeology, and if used cautiously can provide valuable clues.

Marajoara Phase traits that can be traced archeologically are pottery stools, spoons, spindle whorls, pot stands, small vessels with large "wing" adornos, pottery characteristics such as excision, "face scrolls," hollow rims, annular and pedestal bases, and the practice of secondary urn burial. These have the following distributions (fig. 146):

Pottery stools.—From Cerro Narrío in the Province of Cañar, Ecuador, come examples (pl. 84, *b*) closely similar to those from Marajó. Collier and Murra (1943, p. 56) give this description:

> These "seats" differ in size and height, some being quite squat, 10 cm. high and 25 cm. wide, others being as much as 30 cm. high. They have cylindrical walls and are hollow. There is no bottom. The upper platform is perforated by a circular hole and is always painted. . . . The outside of the cylinder is ornamented with painted or incised designs. The perforated platform is always painted red, or red and white. The step-design is frequently used, as are opposed chevrons, hatched triangles, parallel bands, and occasionally punctates.

The shape and the central perforation are duplicated by Marajoara Phase examples. The major distinction lies in the painted ornamentation, which is not characteristic of the Marajoara stools in museum collections, but is present on one specimen in the U. S. National Museum (pl. 84, *a*) and several in the Göteborg Museum (p. 296). The Narrío stools belong to what Collier has called the "Late Complex," which ended with the Inca Invasion of Ecuador (see also Jijón y Caamaño, 1930, fig. 19).

Two similar, fragmentary objects from La Tolita near the mouth of the Rio Santiago, Ecuador, are illustrated by Uhle (1927, pl. 28). The bases are broken but the disks are complete. They appear to be markedly concave and one has a perforation through the center. One is painted red, the other black. Disk diam-

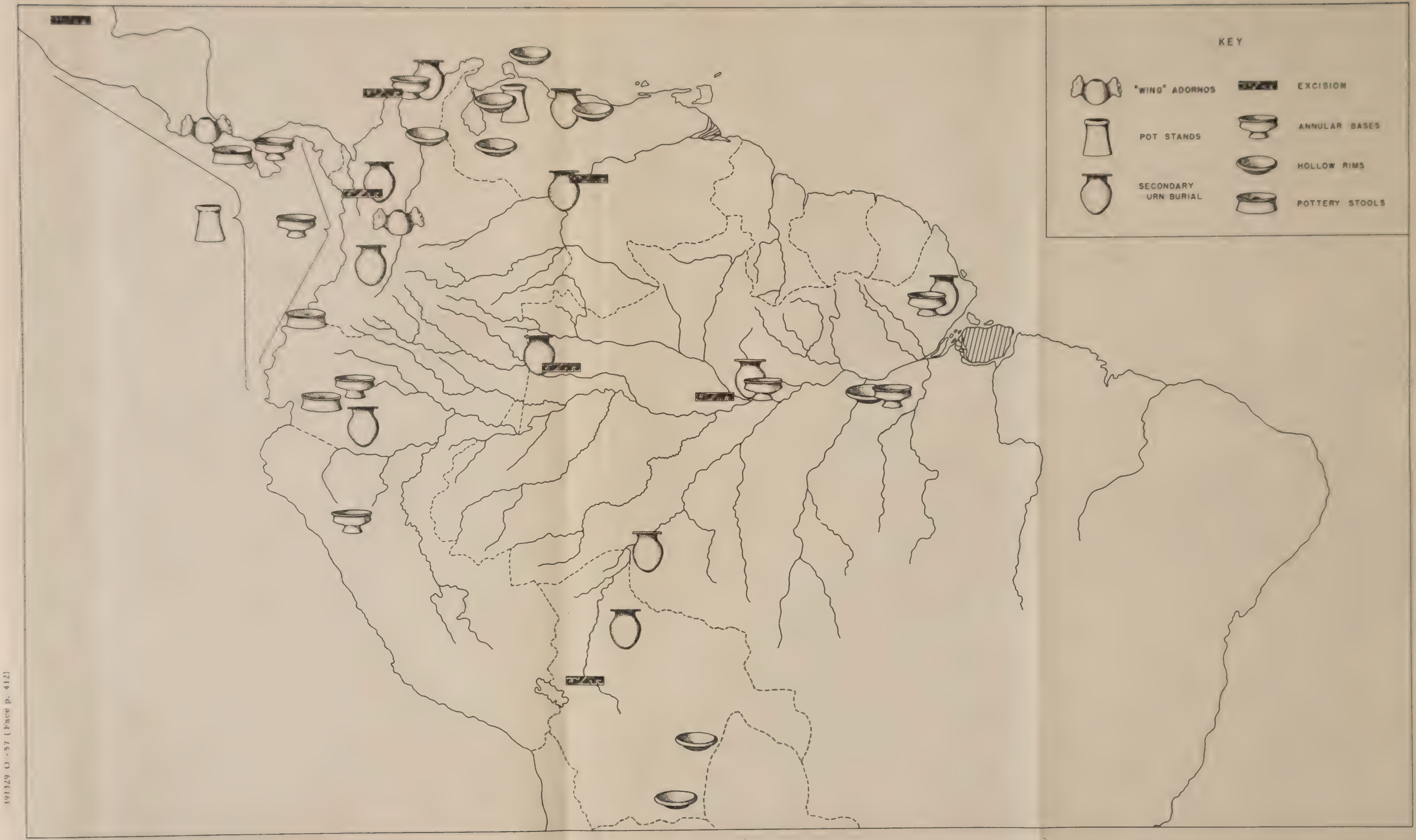
KEY
"WING" ADORNOS
POT STANDS
SECONDARY URN BURIAL
EXCISION
ANNULAR BASES
HOLLOW RIMS
POTTERY STOOLS

FIGURE 146.—Archeological distribution of distinctive traits of the Marajoara Phase. The parallel-hatched area designates Marajó Island, the locus of the Marajoara Phase.

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eter is 19.5 and 22.5 cm. A possible stool fragment from Olón in the Province of Guayas, Ecuador, is illustrated by Disselhoff (1949, pl. 28, p. 401). Unfortunately, no description is given, but the specimen is shown with a concave top, perforated through the center, and flaring pedestal base. The reconstruction is taller than is characteristic of similar Marajoara Phase examples.

Although carved stone examples are more common, stools of pottery are also occasionally found in Panama, particularly the Chiriquí area, and in Costa Rica (Lothrop, 1950, p. 84). Their form differs from the Marajoara and Ecuadorian ones in that the support is furnished by grotesque caryatid figures rather than a solid, annular base.

Spoons.—The spoons that have been identified archeologically in other parts of South America typically have shallow bowls joined to a flat, short handle. They come from the lower level of Mound Velarde, in the Mojos region of Bolivia (Nordenskiöld, 1913, figs. 68–69) and the north highlands of Peru (Bennett, 1944 b, figs. 11c, 18 h). Clay spoons have also been reported from the Department of Nariño on the southern Colombia border, but no description is available (Bennett, 1944 a, p. 53). Objects with a perforated "spout" more closely resembling the Marajoara Phase spoons have been found in the Recuay style from the north highlands of Peru (Bennett, 1944 b, fig. 17 and pl. 2–D) and at Erin Bay, Trinidad (Palmatary, 1950, pl. 107 e). Vessels of similar shape but larger size occur in Puerto Rico (Rainey, 1940, p. 20 and fig. 4 f). None of these approach the Marajoara Phase elaborateness of ornamentation or show the range of shape from a shallow to a nearly spherical bowl (pl. 81).

Spindle whorls.—The type of spindle whorl found at Pacoval, an early Marajoara Phase site, is large, heavy, hollow or solid, and has a rhomboid to spool-shaped profile (fig. 136, *c–g*). Whorls very similar in shape and incised decoration occur in Colombia (American Museum of Natural History Collection). It is significant that in the later Marajoara Phase sites the form has changed to a disk, which is the usual shape of Tropical Forest spindle whorls (fig. 136, *a–b*).

Pot stands.—Two types are used in South America. One consists of three small, spool-shaped or conical pieces forming a tripod support, which occurs archeologically in Mound Masicito, Mojos, Bolivia (Nordenskiöld, 1924 a, map 14) and on Marajó (Torres, 1940, pl. 47; Palmatary, 1950, pl. 86), and is more widespread ethnographically. The other type is similar in shape but larger, so that the bottom of the vessel rests in its concave or hollow top. Lothrop gives the distribution of this form as between the Huastec region of Mexico and the Province of Manabí, Ecuador, with its most frequent appearance in northeastern Costa Rica and Coclé (1942, p. 178, and figs. 225, 359, 360). In Venezuela, it has been recorded only from the State of Lara (Kidder II, 1944, p. 145). "Spool-shaped pottery rests" are said to be frequent in the Mayaro site on the east coast of Trinidad (Howard, 1947, p. 25). The Marajoara examples are more cylindrical than spool-shaped, and more comparable to the miniature ones used in threes (Palmatary, 1950, pl. 8, a).

Small vessels with large "wing" adornos.—One of this type in the American Museum of Natural History collection is from Colombia (pl. 85, *b*). The fidelity with which it resembles those from early Marajoara Phase sites can be seen by comparing it with Marajoara examples (pl. 85, *c;* Palmatary, 1950, pls. 4-f, 5-a, 42-c, and 43-a). A similar specimen has been found in Costa Rica (pl. 85, *a*).

Excision.—Excision as a technique for ceramic decoration has been found in several places in lowland South America outside of the Island of Marajó. One of these is Oriximiná at the mouth of the Rio Trombetas, where a rim sherd (pl. 88, *a*) was collected by Ackermann with a number of modeled and incised sherds more typical of the other ceramics known from this area. Another is Ilha dos

Muras, on the north bank of the Amazon immediately above the mouth of the Rio Negro. From here a square bowl on a high pedestal is illustrated by Barbosa Rodrigues (1892, p. 32, pl. 8, fig. 2), who describes the decoration on the exterior of the pedestal as being painted red and black on the raised portion of the design and white in the background. A rim fragment from a vessel with the extreme variety of excision found on early Marajoara Phase types (in which the proportion of the surface removed by excision is greater than that left) comes from Airão, on the right bank of the Rio Negro (Cruls, 1942, pl. 12, center top). Two excised specimens, one a rim sherd and one a small complete vessel, are reported by Cruls (op. cit. pl. 12, lower left and right) from Coarí, on the upper Amazon. The chronological position of none of these occurrences has as yet been determined.

The most extensively documented non-Marajoara Phase appearance of excision is Acauan Excised from the Acauan Phase at the mouth of the Amazon (pls. 90–91), which closely resembles the Marajoara Phase types in motif, but lacks the varieties of slipping and range in technique of execution characteristic of the latter Phase. The similarities in motif suggest a common derivation, which must be traced to another part of South America since the time difference between the 2 Phases at the mouth of the Amazon appears to be several hundred years (pp. 543 ff. and fig. 205).

Elsewhere in South America, excision on pottery has been reported from Cucuma, near Lake Titicaca (Verneau, 1920, p. 6) and from Rurenebeque in Bolivia (Rydén, Pers. Comm.). A vessel from Lago Mucupy near the Rio Japurá might be considered a simple type of excision (Hébert, 1907, pp. 186–7 and pl. 3). In Colombia, it is evaluated as "common" in the ceramics of Quimbaya, on the Cauca River (Bennett, 1944 a, p. 106, fig. 15b, d), and is a feature of Mason's "fine carved ware" from the Tairona Culture of Santa Marta (1939, pp. 396–397 and pl. 232, figs. 5–6; pl. 237, fig. 7; pl. 246, figs. 6–7), where the recesses are often treated with a white coating (pl. 87, *a*). Excision is typical of the sherds from Arauquin, on the Apure River near its junction with the upper Orinoco (Petrullo, 1939, pl. 31, fig. 1, b-f).

Excision, often followed by refilling of the recesses with clay of different colors, is characteristic of the Valley of Mexico. Linné (1925, pp. 141–2) notes that a simplified variety of this decoration is present in southern Mexico, Guatemala, Costa Rica, and Panama, and considers the South American appearances as offshoots from this center. Verneau (1920, pp. 9–10) draws the same conclusion from his review of the distribution of the technique.

"*Face scrolls.*"—In the light of the numerous other resemblances between the Marajoara Phase and the northwestern part of South America, it is pertinent to recall Lothrop's (1942, p. 254) comparison of the conventionalized faces set in semicircular fields produced by bisecting the interior of a shallow bowl found at Coclé with examples from Marajó. In both places they appear fully developed, perhaps representing different lines of diffusion from the same source (op. cit., figs. 36, 40, 487–a).

Hollow rims.—The archeological distribution of hollow rims skirts the Andes and northern South America. They have been reported from Tarupáyu, Bolivia (Nordenskiöld, 1924 b, fig. 5; 1930, fig. 6); from Yumbia, in the Province of Tarija, Bolivia (Métraux, 1948 c, p. 468); from El Horno, Department of Magdalena, Colombia (Reichel-Dolmatoff, 1951, pl. 19–a); from the states of Falcón (Osgood and Howard, 1943, fig. 7), Aragua (Osgood, 1943, fig. 6–c and k), and Lara (USNM specimen No. 398674) in Venezuela. They also occur on the islands of Aruba, Curaçao and Bonaire, just off the Venezuelan coast (Josselin de Jong, 1918, figs. 23, 23–a and pl. 21, fig. 10). In the Amazon valley, hollow rims occur in the Santarem area (Palmatary, 1939, p. 106) and at the Aruã sites of C–6 and C–9 on southern Caviana, as well as in the early mounds of the Marajoara Phase.

Annular and pedestal bases.—These occur frequently on the ceramics of the advanced cultures in Mexico, Central America, and the Andean area from Venezuela to Peru. Linné's map (1929, map 6) shows them to have a Circum-Caribbean and Andean distribution, but to be absent archeologically from the South American lowlands except at Santarem and in the Territory of Amapá. Although he omits the designation, they are also present at Miracanguera, below Manaos, and are relatively frequent in the Marajoara Phase, especially at the earlier sites (Palmatary, 1950, pls. 45–b, 47–h, 55–a, b, 67–b, 76–b, c, 79–b, 80–a–d). Linné (1929, p. 106) considers this evidence of diffusion, noting that:

> It is remarkable that vessels on columnar or annular feet are of such sparse occurrence outside the areas of the high cultures. Their occurrence in northern South America, on the lower Amazon River and in the Lesser Antilles corresponds with other cultural elements which have emanated from the high culture areas.

Secondary urn burial.—Nordenskiöld (1920, map 16) has plotted the occurrences of urn burial in South America, distinguishing the primary from the secondary type where the source is sufficiently explicit. Whereas primary urn burial is relatively common, in a distribution that almost circumscribes the Amazon Basin (beginning in the region of Baia, Brazil, extending down the Atlantic coast, through the Bolivian Montaña, northward along the Pacific coast and eastward through Venezuela), secondary burial in urns is more limited. Nordenskiöld (ibid.) reports it for the Omagua and Roamayna on the Marañon; in the Nariño and Quimbaya areas of Colombia; among the Indians near Cartagena at the mouth of the Magdalena, Colombia; in the Goajiro, Valencia and Ature regions of Venezuela; on the Rio Branco, Brazil; at several spots along the Guiana coast; among the Carajá and Indians on the lower Xingú, Brazil; and for the Rio Guaporé along the Brazil-Bolivia boundary. The two types are combined in several places along the middle and lower Amazon.

When the known occurrences of these distinctive Marajoara Phase traits are plotted on a map (fig. 146), the greatest concentration appears in the northwestern corner of South America. The archeology of this area is so poorly known, however, especially the eastern slopes of the Andes, that it is desirable to supplement evidence from this source with information from the living tribes. Here the situation is more fortunate in that the groups inhabiting the Montaña are among those that have suffered least from European influence, and because the objects of ceramic composition in the Marajoara Phase can often be compared with similar forms made of wood or other perishable materials that would be lost in archeological sites. Certain traits such as wooden stools and female pubic coverings have diffused so widely as to lose all significance for a distribution study of this sort, and others like ear ornaments are too seldom described in sufficient detail to permit comparison. A few ethnographic traits, however, strikingly support the conclusion derived on the basis of the archeological data. These are tangas, pot rests, tassels, labrets, whistles, and frontal deformation of the skull.

Tangas.—What appears to be the only recorded example of the modern use of a ceramic pubic covering exists among the Panoan tribes of the Ucayali River, where as part of the puberty observance a girl is said to have been "isolated in her hut for one month, wearing an 'egg-shaped' piece of pottery as a pubic cover" (Steward and Métraux, 1948, p. 585). A pubic covering of shell is worn by the Zapa women (op. cit., p. 641). Elsewhere in the Tropical Forest, such articles were of vegetal material and had no ceremonial association.

Pot rests.—The use of small rests in groups of three for the support of round-bottomed vessels has a distribution that skirts the Andes, having been recorded for the Movima (Métraux, 1948 b, p. 426), the Cavina (Nordenskiöld, 1924 a, p. 134 and map 14), the Piro (Farabee, 1922, pl. 6), the tribes of the Montaña (Steward, 1948 c, p. 519), the Quijo (Steward and Métraux, 1948, fig. 93), the Witoto (Nordenskiöld, loc. cit.), the Indians of the Caiarí-Uaupés (ibid.), the Indians of the Rio Branco (Cruls, 1944, pl. 39) and the Mapidan (Nordenskiöld, loc. cit.). Tessman (1930, Kartogramm 11) shows a widespread use in the upper Ucayali and Marañon.

Tassels.—Anthropomorphic burial jars are frequently shown with a tassel pendant from a spool worn in the ear lobe (fig. 147). Nordenskiöld (1919, p. 130), who has reviewed the distribution of tassels, concludes:

> The use of tassels on cords of various kinds is clearly a custom that came to the Chaco from the culture zone to the west. Within the area of my investigations I found these tassels among the Choroti, Ashluslay, Mataco,

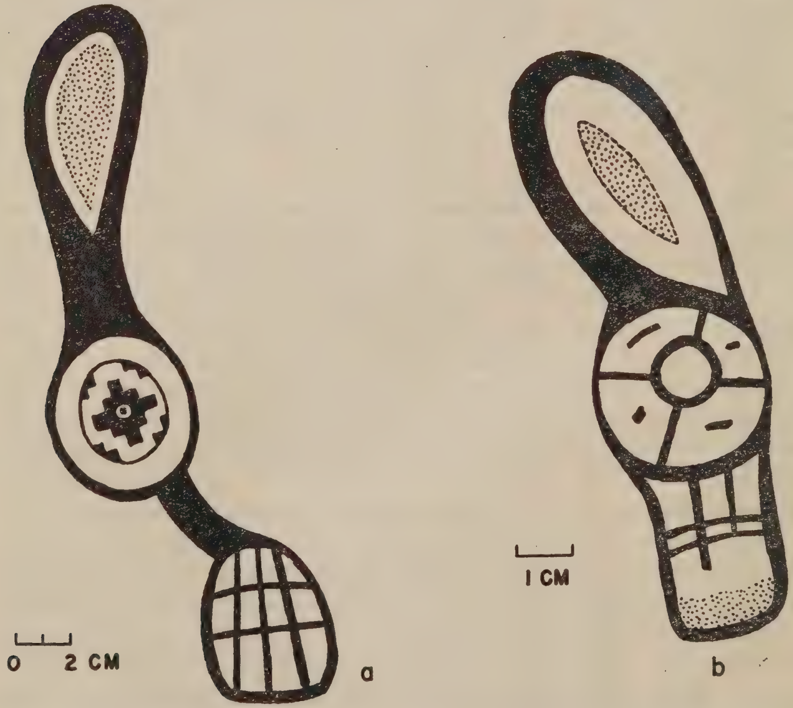

FIGURE 147.—Tassels shown as ear ornaments on Marajoara Phase anthropomorphic jars.

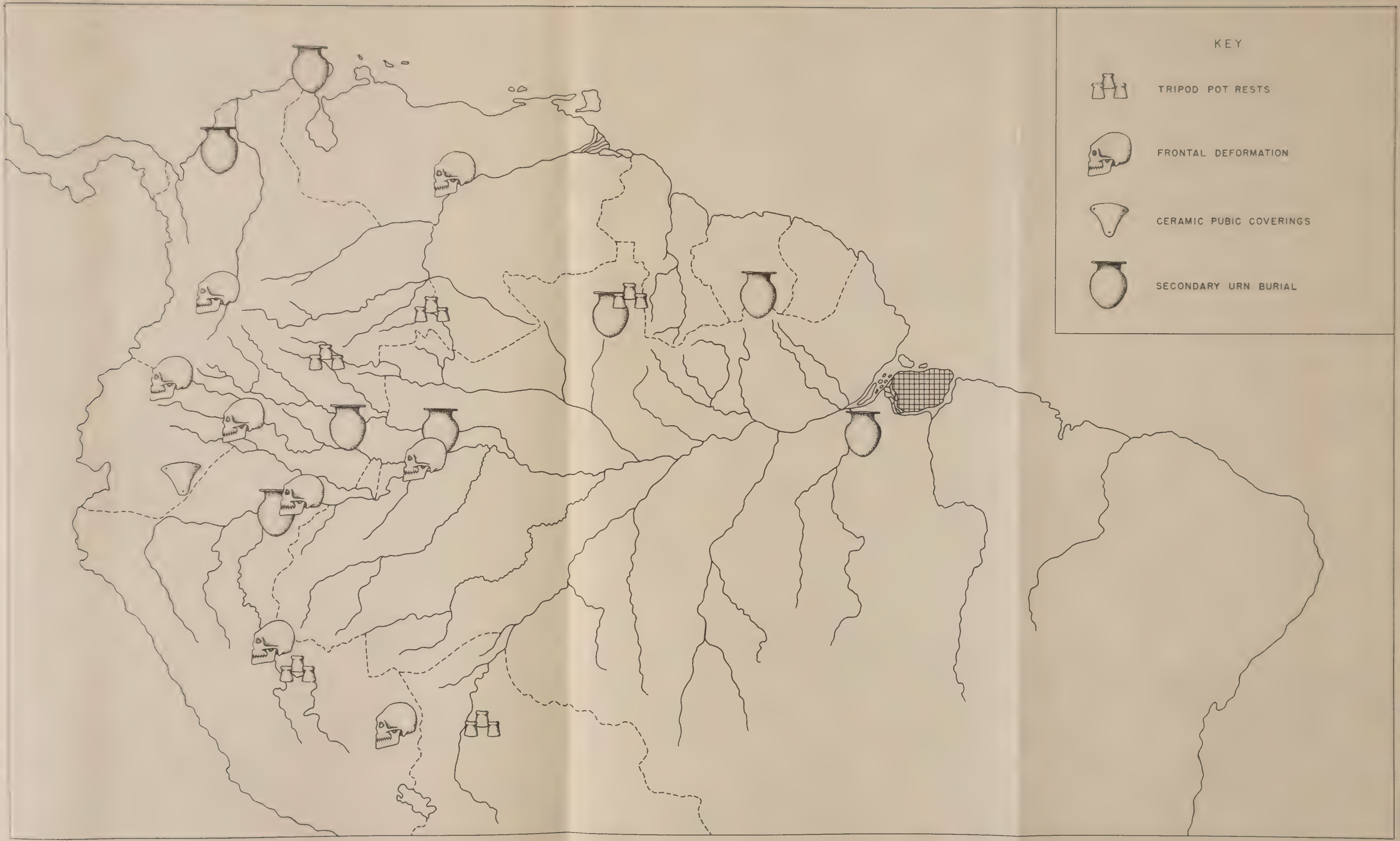
KEY
TRIPOD POT RESTS
FRONTAL DEFORMATION
CERAMIC PUBIC COVERINGS
SECONDARY URN BURIAL

FIGURE 148.—Ethnographic distribution of distinctive traits of the Marajoara Phase. The cross-hatched area designates Marajó Island, the locus of the Marajoara Phase.

Toba, Chiriguano, Chané, Aymara, and Quichua but among no tribe on the plain north of Sta. Cruz de la Sierra. Tassels are common on the textile fabrics found on the Peruvian coast.

Labrets.—The perforation of the lower lip for the insertion of an ornament is a widespread trait in the Tropical Forest culture area. Two types of labrets were used, one "capshaped" and the other long and slender. Nordenskiöld (1920, pp. 75–76) concluded that the latter type was the older because of its much wider distribution in South America. If the identification of the two specimens from Marajoara Phase sites as labrets is correct (fig. 135), they are of this older type. Although found ethnographically in various parts of the Amazon (e. g., Carajá; Lipkind, 1948, pl. 21, fig. 21), they are particularly characteristic of the tribes of the Montaña (Farabee, 1922, pl. 5; Tessman, 1928, pls. 15 and 16).

Whistles.—This trait is less useful than might be desired because the form is not often described, and many varieties exist that may have independent origins. However, whistles are common among the musical instruments in the western margin of the Amazon area and rare in other parts of the Tropical Forest (Steward, 1946–50, vol. 3).

Frontal deformation of the skull.—Among tribes practicing skull deformation by binding a pad over the forehead to flatten the frontal region are the Quijo (Steward and Métraux, 1948, p. 654), the Omagua (Métraux, 1948 d, p. 694), the Awishira (Steward and Métraux, 1948, p. 642), the tribes of the Ucayali (op. cit., p. 572), the Peban and Tupian tribes of the Montaña (Steward, 1948 c, p. 521), the Tiatinagua (Métraux, 1948 b, p. 444), tribes north of the Orinoco (Kirchhoff, 1948, p. 485), certain tribes of the Guianas (Gillin, 1948, p. 834), the Pijao in Colombia (Hernández de Alba, 1946, p. 957), and tribes on the Ecuador coast, such as the Palta and Esmeralda (Murra, 1946, pp. 801, 803). Frontal and fronto-occipital deformation are also characteristic of the Circum-Caribbean tribes (Steward, 1948 a, p. 5).

This list could be extended by including more of the ceramic traits, such as vessel shapes, manner and motif of decoration, features such as holes near the rim edge for the attachment of strings (Nordenskiöld, 1920, p. 140 and map 13) and specially made lids for vessels (Linné, 1929, map 10). Many of these are discussed by Palmatary (1950, pp. 331–345) and all that need be said here is that where there are correlations in South America, they are almost invariably to be found in the Ecuador-Colombia-Venezuela area. It will be noted that the archeological correlations tend to be farther north than the ethnographical ones (cf. fig. 146 and fig. 148). Many of the latter are, in fact, concentrated in the Bolivian Montaña. This may be the result of differential survival or extinction of the aboriginal groups in different parts of northwestern South America, or it may indicate that there has been a general "drift" of culture southward along the Andes in late prehistoric times. Evidence is accumulating to support the conclusion that the Bolivian Montaña and lowland are the recipients rather than the originators of most of these traits.

Since attention has been called several times to the resemblances between the modern pottery of the Panoan and other Montaña tribes and that of the Marajoara Phase (Kroeber, 1949, p. 486; Steward, 1948 c, p. 522), a word should be said on this subject. In the light of the evidence that the Marajoara Phase is derived from the northwestern part of South America, and shares certain other traits with the living tribes of the Montaña, a similarity in painted decoration on pottery is not at all unexpected. However, it does not seem likely that the relationship between the two areas is a direct one, since none of the complex Marajoara Phase incised or excised techniques occur in the Peruvian Montaña. Although the archeology of the Montaña area is almost unknown, pottery has been reported from the Rio Napo in Ecuador that could easily be ancestral to the modern Montaña styles. The Napo material also shows some affiliation with Marajoara painted styles, but too little is known of the complex to judge the significance of this resemblance. There are undoubtedly undiscovered styles and cultures in the Montaña area and farther to the north that will contribute to the solution of this and other problems when some scientific archeological work is undertaken.

A comparison of the two distribution maps (figs. 146 and 148) shows the greatest concentration and largest number of Marajoara Phase trait resemblances to be in the northwestern part of the continent, specifically in Colombia and Ecuador. The occurrences of various of these traits in other parts of South America follow a pattern that may represent several major lines of diffusion or migration: eastward through Venezuela and out into the Antilles; southward along the eastern slope of the Andes into Bolivia; and down the tributaries leading into the Amazon and ultimately into Marajó Island.

One final point might be raised in support of an Ecuador-Colombia-N. E. Peru origin for the Marajoara Phase, and that concerns the geographical features, which contrast with those of the Andes farther south. Marajoara culture is a mixture of traits that are typically Tropical Forest with others that are characteristic of the more advanced Circum-Caribbean and Sub-Andean cultures. Tangas and labrets, for example, are lowland in their distribution, and certain vessels shapes are out of the highland tradition. Clay stools and complex ceramic treatments like excision and hollow rims, on the other hand, belong to the region of Circum-Caribbean or Sub-Andean culture. In Peru and Bolivia, the highlands and the lowlands are sharply divided by the north-south range of the high Andes, and there appears to have been little effective cultural communication between the two regions. In Ecuador and Colombia, however, this situation is modified. The coast is humid, tropical forest rather than arid desert, and the tropical zone extends like fingers into the highlands via the valleys of the rivers that drain to the west. Other rivers, like the Japurá, the Putumayo, and the Napo, lead from the highlands into the Amazon in the opposite direction. Probably because of the less uniform environment, the culture never reached the height that it did in the highlands farther south and there appears to have been greater plasticity in the environmental adjustment and greater interchange between highland and lowland groups (cf. Bennett, 1946, pp. 823–824). This sort of background might be expected to give the combination of otherwise distinct traits manifested by Marajoara culture.

Perhaps for the same unexplained reason that motivated so many of the other penetrations into the tropical forest lowlands, the Marajoara Phase moved out of its homeland and down one of the tributaries leading to the Amazon. To the question "Why did they go so far?" there may be two answers. One was suggested by Netto (1885, pp. 417–418):

> . . . the great river was peopled with savage tribes, who by their numerical superiority, if not by their great ferocity, constituted at different times and different places in the course of the river no small obstacle to the settlement of the invaders. Some of those thus persecuted, unable to return to the regions from which they had come, took the only path open to them. . . . Those that were on the headwaters . . . descended the river until they reached Marajó.

Another possibility may be that the dense forests and flooded river banks were too different from the environment to which the people were accustomed for them to be considered habitable. The trip downriver must have been a rapid one, because no Marajoara Phase sites have come to light along the main course of the Amazon, which is better known archeologically than other parts of the lowland.[31a] The immigrants settled finally on Marajó, perhaps because the incumbents were friendly or unresistant, perhaps because the open *campo* was more congenial to them, perhaps because it was the "end of the trail." At any rate, the people must have soon learned that the environment could not support them as they had previously lived, and although they apparently tried to carry on, the culture began a slow decline toward the Tropical Forest level.

With the omission of a few traits like metallurgy and a change from the present to the past tense, it is remarkable how well their reconstructed history fits the description given by Steward (1948 a, p. 2) of the fate of similar penetrations into the tropical lowlands in post-Columbian times by Circum-Caribbean tribes:

> Gone are the intensive horticulture, the dense population, the large villages, the class-structured society, the mounds, temples, idols, the priests, the warfare, cannibalism and human trophies, the elaborate death rites, and even the tech-

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[31a] After this report went to press, we discovered that several Marajoara Phase sherds have been reported from the Rio Trombeta region (Toledo, 1942, figs. 1–5, 7). These include 2 figurine heads and a rim adorno of indisputable Marajoara Phase origin and 3 other sherds that cannot be identified with certainty from the illustrations, although they look like Marajoara Phase pottery types. If the provenience is correct, this material supports the theory proposed here of a downriver movement of the Marajoara Phase.

nological and esthetic refinements evidenced in the early metallurgy, weaving, ceramics, and stone sculpture. The modern tribes who retain a predominantly aboriginal culture have come to resemble the Tropical Forest tribes rather than their own ancestors. They carry on small-scale slash-and-burn farming, and many of them now hunt and fish more than they till the soil. They live in small villages, weave simple cloth, and make only plain pots. Their society is unstratified, their religious cults are scarcely remembered, and the principal survival of former days is the shaman.

The tendency to select unexplored areas as potential sources for intrusive traits or cultures is often criticized, and rightly so, since it encourages dodging rather than facing the problems involved. The solution offered for the origin of Marajoara culture may seem to be of the same category, but it must be remembered that there is hardly a part of South America outside of Peru and the highlands of Bolivia where there are not wide gaps in our knowledge of the archeology. On the basis of archeological evidence, or lack of it, it would be safe to derive the Marajoara Phase from almost anywhere. The Ecuador-Colombia-N. E. Peru area was not the only possible alternative to indigenous origin, but was selected after careful examination of the ecological, archeological, and ethnographical evidence.

A continuation of the site seriation will eventually permit the identification of the final site occupied by the Marajoara Phase. It seems unlikely that this will turn out to be greatly different from the last period represented at J–14 and J–15, where the classic and diagnostic traits have largely been lost. It was probably about this time that the Aruã moved out into the islands from the Territory of Amapá and expelled or assimilated the remnants of the Marajoara Phase.

Of all the archeological Phases distinguished in the Territory of Amapá and on the Islands of Mexiana, Caviana, and Marajó, the Aruã Phase is the only one that does not loom up suddenly in the midst of a void. It can be traced back from these islands to the mainland, and there are ceramic affiliations that point to a more remote origin farther to the north (pp. 548 ff.). Although the 1948–49 investigations turned up only two Aruã Phase habitation sites on the north-central coast of Marajó Island, 18 villages and cemeteries were excavated on Mexiana and Caviana and the pottery analysis established the Marajó sites as belonging to the earlier part of the island occupation.

Historical documents identify this tribe as inhabiting the eastern part of Marajó Island, and it should be possible to locate Aruã sites in this area. Their failure to be recorded thus far may be the result of their being overshadowed by the more impressive sites of the Marajoara Phase, which abound in the same region.

The Aruã were a dominantly riparian people and appear to have preferred to stay close to the coast and the larger rivers. On Mexiana and Caviana, which are so small that they can be crossed in a day's travel, they spread over the entire island. On Marajó, however, they appear to have had a primarily coastal distribution, from Chaves eastward to the Cabo Maguarí and then southward at least as far as the present town of Soure (fig. 145). The variety of Piratuba Plain associated with glass beads in sites on Mexiana and Caviana indicates that the first contact with the Europeans probably took place not long after the Aruã had settled on the islands in the mouth of the Amazon. From this time on, they fought a losing battle for their freedom and their way of life, and although they were able to hold out longer than the Mazagão and Aristé Phases on the mainland (p. 587), they finally succumbed and soon after 1816 the last remnants vanished from sight.

The archeological sequence on Marajó Island can be summarized as comprising a succession of unrelated cultures, each of which appears suddenly, flourishes briefly, and then disappears or is absorbed by the succeeding culture. Four are Tropical Forest in level of development and one is more advanced. This lack of continuity is in sharp contrast to the situation in many other parts of North and South America, but finds a parallel in the Antilles and similar regions where pottery cultures are relatively late arrivals.

The earlier Phases on Marajó appear to have been partly contemporary, the Ananatuba and Mangueiras Phases and later the Mangueiras and Formiga Phases existing at the same time on different portions of the island. An effort was made to estimate the amount of this overlapping by using the figures on village duration derived from density of the ceramic refuse (pp. 253–254). When the villages are placed in the temporal sequence indicated by the pottery seriation and contemporary villages are excluded, the sum of the nonoverlapping durations will give a total duration for each Phase on the part of the island represented by the site distribution.[32] These results show that the Ananatuba Phase had the longest duration of the pre-European cultures (fig. 149). Arriving about A. D. 700, it is the earliest ceramic culture on the north coast of Marajó and appears to be the sole occupant of that area at the beginning. In the latter half of its duration, it was contemporary with villages of the Mangueiras Phase, which in turn overlaps with the Formiga Phase. The advent of the Marajoara Phase, which dominated the greater portion of the island, terminated the earlier Tropical Forest Phases. After the decline and

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[32] The sites included and the total durations of the Phases are:
Ananatuba Phase (table E), Sites J–7, J–8, J–9, J–10: total 368.6 years.
Mangueiras Phase (table F), Sites C–3, J–5, J–13, and half the duration of J–7: total 330 years.
Formiga Phase (table H), Site J–6 (cut 1): total 75 years.
Marajoara Phase: estimated at 200 years.
Aruã Phase: estimated from 60 years prior to 1500 until 1816.

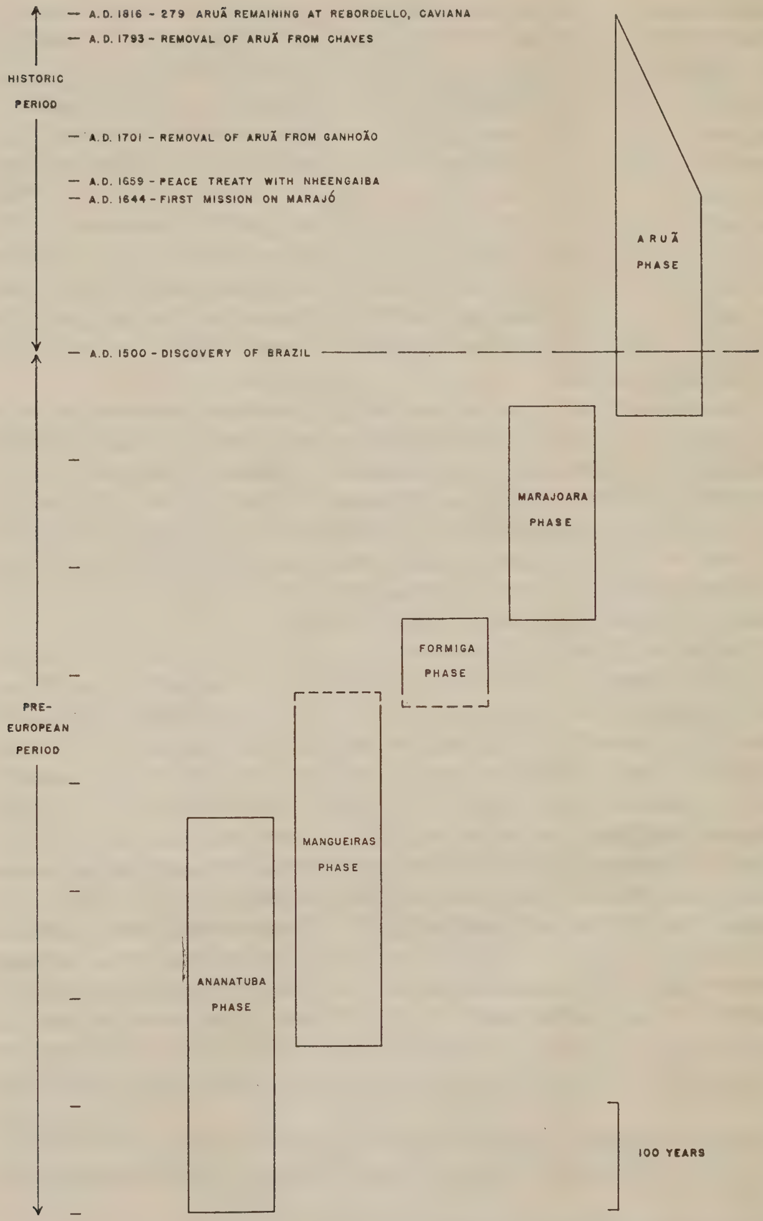

FIGURE 149.—Sequence and estimated relative duration of the prehistoric cultures on Marajó Island.

fall of the Marajoara Phase, the savanna half of Marajó was occupied by the Aruã, who became extinct with increased European occupation of the island in historic times.

Several explanatory comments should be made in regard to this chart. Since the ceramic seriation indicates that these sites represent actual successive habitations, and since the initiation and termination of most of the Phases is also well established, the estimates probably give as good an indication of the *relative* duration of the Phases on northern and central Marajó as can be obtained in the absence of historical records. However, the absolute dates shown on the time scale may be less reliable. The 100-year intervals are based on a standard rate of sherd refuse accumulation, and, although tests suggest that the formula may be reasonably accurate, further data are needed before it can be considered totally reliable. Consequently, the date of A. D. 700 for the introduction of the Tropical Forest Pattern to Marajó Island must not be taken as more than an approximation.

The major results derived from this analysis of the archeological sequence on Marajó Island can be summarized in nine points:

1. There is no evidence to support the conclusion that any of the pottery-using cultures were indigenous to Marajó Island.

2. With the exception of the Aruã, which is the final culture in the island sequence, none of the Phases were derived from or have any discernible connection with any of the cultures in the Territory of Amapá or the Guianas.

3. Although possessing certain Tropical Forest culture traits, the Marajoara Phase is more advanced than the Tropical Forest Pattern and has affiliations with the Circum-Caribbean and Sub-Andean cultures of northwestern South America that suggest its derivation from somewhere in that general region.

4. In view of the proposed derivation of the Marajoara Phase, it is possible that the ceramics of living tribes of the Peruvian Montaña are modern survivals of a painted tradition of which the Marajoara Phase was one of the earlier components. It seems probable, however, that their immediate ancestry will be traced back to the culture represented by archeological specimens from the Rio Napo region rather than to Marajó Island.

5. The thesis that an advanced culture will decline under tropical forest conditions, advanced principally by Steward (1949 b, p. 762), is supported by the evidence of such a decline in the Marajoara Phase, which arrived on Marajó with a culture substantially higher than the Tropical Forest level of development, but was unable to maintain this higher level under local environmental conditions.

6. The Ananatuba, Mangueiras, Formiga, and Aruã Phases represent typical Tropical Forest cultures and show no evidence of having originated by deculturation from the Circum-Caribbean level.

7. Marajó Island cannot be considered as the source or the center of diffusion for any known ceramic style, contrary to the theory proposed by Willey (1949 b, p. 194). It is rather the "end of the line," reached successively by at least five distinct groups in pre-European times.

8. Guess dates derived from estimates of rate of refuse accumulation suggest that pottery-using cultures did not appear at the mouth of the Amazon until about A. D. 700.

9. Except in the case of the Aruã, who moved down the coast of the Guianas from the north, the affiliations of the Marajó Island archeological Phases as far as they can be determined at present are with regions farther up the Amazon. This supports the conclusion derived from an analysis of the archeological situation in the Territory of Amapá that the primary route of migration and cultural diffusion into the lower Amazon was down river rather than around the Guiana coast.

THE ISLANDS OF MEXIANA AND CAVIANA

GEOGRAPHICAL DESCRIPTIONS

MEXIANA [33]

The Ilha Mexiana lies 9 to 11 km. due north of the central part of the north coast of Marajó in the true mouth of the Amazon River. It is separated from the larger island of Caviana on the west by the Canal Perigoso. This particular channel of water, varying in width from 5 km. at the narrowest part to 20 km. at the widest, is the point where the full impact of the outflowing Amazon and incoming tides of the Atlantic Ocean meet. The turbulence churned up by the incoming tide battling the outflowing river for supremacy twice each day, plus the rough surface stirred up by the ocean winds, make this crossing hazardous in small dugouts, small sail boats or larger launches and has earned it the name "Dangerous Canal."

Mexiana is oval in shape, 55 km. long in an east-west axis and 24 km. wide in a north-south axis, narrowing at the western tip to around 12 km. (fig. 150). The island runs from 49° 20′ to 49° 50′ Longitude, and is almost bisected by the equator so that its north shore is 6′ North Latitude while the south shore is 8′ South Latitude.[34] Like Marajó, the perimeter of Mexiana is slightly higher than some of the central parts of the island. Although not as high as southern Caviana, the banks in places reach 1 to 3 meters above the high tide level. Some of the coast line has a beach, which varies from soft, impassable, fine mud to several hundred meters of white sand exposed at low tide. However, most of the shore is heavily overgrown with shrubs and undergrowth that thrive on conditions which leave their roots high and dry twice a day at low tide and completely submerged at high tide. The general surface of the island is flat with a gentle sloping toward large marsh areas in the interior. These are named after the water plant, *piri*, which abounds in them. The three largest are the Pirizal do Jacaré on the west, running east-west in a long narrow finger roughly 13 km. long by 1.0 to 1.5 km. wide; the Pirizal do Japuá in the center, forming a crescent 9 km. long from north-south and 1 to 2 km. wide; and a smaller *pirizal* in the eastern part of the island. These areas shrink to shallow ponds during the dry season, with typical marsh growth of hyacinths, rushes, reeds, lilies, etc., and provide the watering place of most of the fauna during this time of the year. The land to the north of Pirizal do Jacaré, known as Campo do Retiro, rises 25 cm. above the highest waterline of the Pirizal. The *campo* adjacent to the Pirizal never seems to flood even though it is reported to be muddy and wet during the rainy season. Although the major part of the central core of the island is flat *campo*, cut up here and there by the headwaters of the many streams that drain into the Amazon, dotted with clumps of forest, or covered with scattered *carobeira* trees, several parts of the *campo* are slightly lower, tend to flood in the wet season, stay wetter as the dry season approaches and thus have a heavier, dense, and greener growth of grass. These are called *baixas* (low areas) and the general report of the *caboclos* is that unless the *campo* is burnt annually the *baixas* become so dense and matted that cattle become lost and a man cannot ride through the region without hacking his way with a machete. The slight difference in altitude or depression, which causes this excess water retention, restricts the growth of forest or the *carobeira* tree to the higher *campo*, which, in the dry season, parches and becomes as hard as concrete with the grass drying up.

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[33] For an excellent, accurate, interesting and well-written account of the wildlife, the geographical features, and general living conditions of cattle ranching on the Island of Mexiana in 1848–49, see the account by the naturalist Alfred R. Wallace (1853, pp. 86–107).

[34] These observations are taken from the latest USAAF World Aeronautical Charts made from maps corrected and based upon aerial photography, with the geographical features taken from a map made of the island in 1906.

The coast is fringed by heavy forest growth stretching inward into the *campo* in long fingers. The *campo* reaches the coast in a few places, one of which is the present headquarters of the cattle ranching on the island, Fazenda Nazaré, but in most places along the southwest coast the fringe is one-half to 1 km. wide, broadening out at the south and eastern tip to 5 to 10 km. With the exception of a few spots, the northern coastline has a broader, dense forest belt extending 4 to 9 km. inland (fig. 150).

Contrary to Marajó and Caviana, there are no major *igarapés* (streams) draining the island of Mexiana. A few, such as the Igarapé Jacaré, Igarapé Fundo Grande, Igarapé Pinto, Igarapé Limão da Fora, Igarapé Japuá, Igarapé Santa Maria, and Igarapé Chapeo are navigable at high tide for 5 to 10 km. inland in small sailboats and dugouts, and there is a dendritic network of smaller streams all along the coastline. All of the streams are heavily affected by tidal action with only the larger ones retaining any water at low tide in the dry season.

There is little difference in flora and fauna between this island and either Marajó or Caviana which would have had any ecological significance. The marshes (*pirizais*) of Mexiana offer the same attraction to birdlife that the lakes do on the other islands; the *igarapés* have the same abundant supply of fish. The availability of the plant fibers, wild fruits, berries, nuts, and edible plants as well as birds and

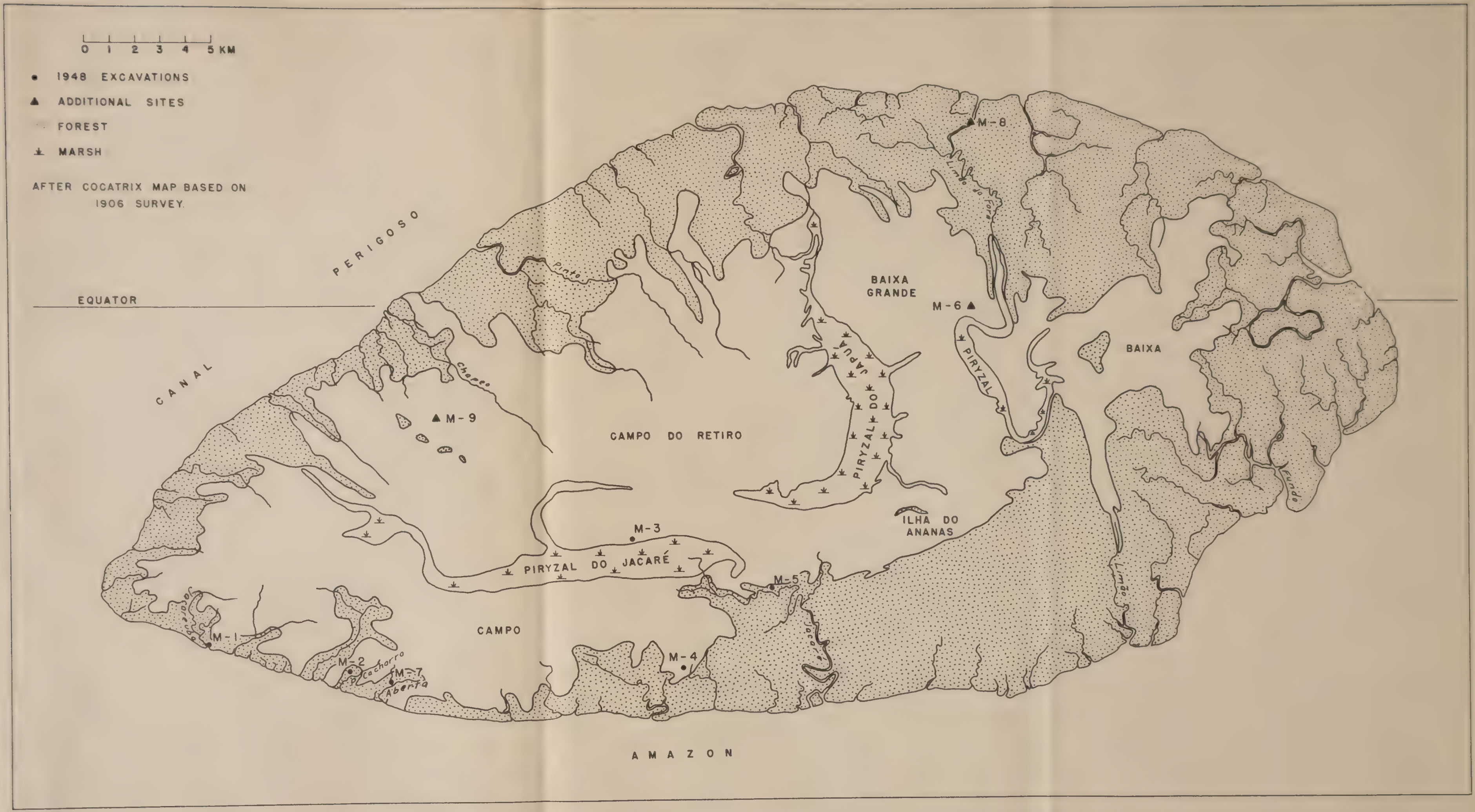
0 1 2 3 4 5 KM
● 1948 EXCAVATIONS
▲ ADDITIONAL SITES
FOREST
MARSH
AFTER COCATRIX MAP BASED ON 1906 SURVEY
PERIGOSO
EQUATOR
CANAL
Pinto
Chapeo
M-9
CAMPO DO RETIRO
BAIXA GRANDE
M-8
Limão do Fore
M-6
PIRYZAL
PIRYZAL DO JAPUA
BAIXA
ILHA DO ANANAS
Fundo
Limão
M-3
PIRYZAL DO JACARÉ
M-5
Jacaré
CAMPO
M-1
M-2
P. Cachorro
M-7
Aberta
M-4
AMAZON

FIGURE 150.—Mexiana Island, showing major streams, vegetation pattern and location of archeological sites.

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animals appears to be about the same as on the larger islands, and there is no reason to list the flora and fauna again (see pp. 172–174). In other words, the available food supply did not offer any restricting factor to the use of Mexiana by the Indians.

The Ilha do Ananás deserves special attention for this island of forest, 7 km. northeast of M–5 and east of the Pirizal do Japuá (fig. 150), has a large number of wild pineapple plants growing among the trees. The island of forest is 30 meters wide, 500 meters long, and stands 50 cm. above the surrounding *campo*. A few centimeters below the leaf humus is a fine, pure-white sand, which stands out as a most peculiar formation, for the *campo* around the Ilha do Ananás is all a heavy, light-gray, clayey soil. In among the thick forest growth, hundreds of pineapple plants are located only at the western half of the Ilha do Ananás. A careful examination of the surface, with a few test pits did not reveal any potsherds or broken burial vessels anywhere in the forest or in the nearby *campo*. According to the *caboclo* guides this place is the only spot in the interior of the Mexiana where *ananás* can be found, although they knew of their occurrence near Igarapé Fundo Grande and Igarapé Limão da Fora along the coast. Local tradition attributes the occurrence of pineapple on Mexiana, especially at the Ilha do Ananás, to plantations of the Indians. As far as it was possible to check into the European history, the pineapple had not been planted by any of the recent settlers. It is possible that the peculiar soil conditions offered a natural environmental situation permitting the plant to survive here without the initial planting by man.

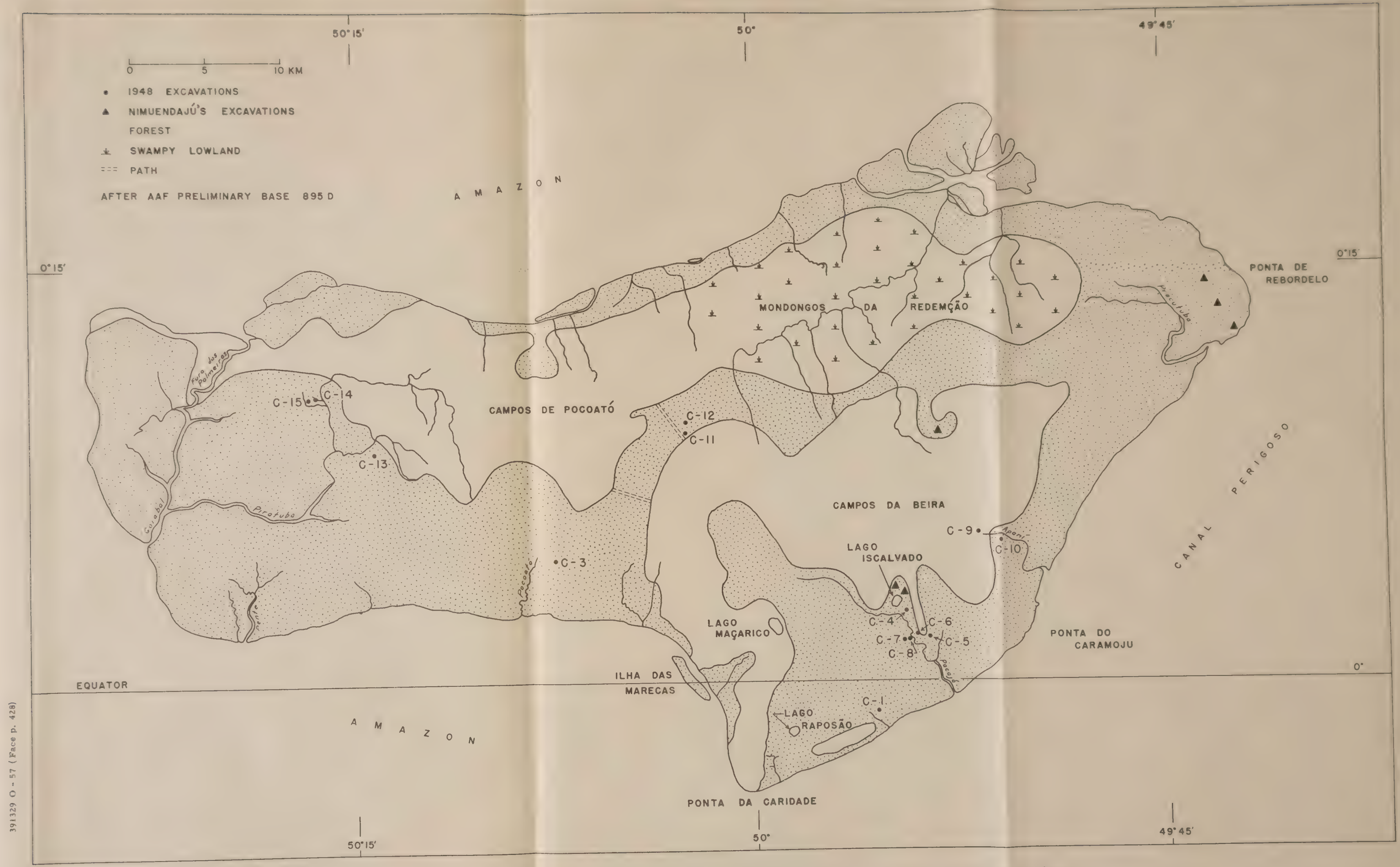
CAVIANA

Caviana is the large island that lies squarely across the true mouth of the Amazon. It is the only geographical unit covered by the archeological survey and excavation that has suffered a major alteration since aboriginal times. This occurred in 1850, when a *pororoco*, which is the name given to the wall of water that forms the front of the incoming tide, cut through the Rio Guajurú and separated the island into two independent parts. As a result, the contours shown on many earlier maps differ from those delineated by recent air photography, from which the maps in this report were derived (fig. 151). The *pororoco* of 1850 split off the western quarter of the original area, creating a new island that has been given the name of Ilha Capinal. Although we were told of sites there, we were unable to arrange for a visit, and it is with the remaining three-quarters, still known as Ilha Caviana, that this section of the report is concerned. This recent subdivision must be kept in mind since the original condition of the island made its present eastern half much more accessible to the adjoining mainland than it now appears and explains why it was the major place of settlement for the Aruã when they were expelled from Brazilian Guiana (Territory of Amapá).

The present Ilha Caviana is 80 km. long and 40 km. in maximum width toward the east end, narrowing to about 24 km. along the western half. The 50th parallel of longitude crosses it a little east of the center, and the equator passes through the southern tip. The general surface of the island slopes from south to north. Along the southern coast, the bank rises vertically 1 to 7 meters above the high tide level. At low tide a narrow, steeply inclined sandy beach or a broad mud flat is exposed in some places, while in others the trees extend into the water. As one travels northward, the elevation gradually declines and the well drained *campo* becomes swampy and largely uninhabitable. This surface configuration produces differences in the abundance and accessibility of water that are reflected in the vegetation pattern and have an influence on past and present human settlement.

The vegetation is divided between forest and *campo*. The forest forms a belt of varying width around the coast, with small stretches on the northwest and in the vicinity of Ponta da Caridade on the south where the *campo* reaches to the shore. The largest expanses of unbroken forest are on the southwest, where it extends to the center of the island, and on the eastern tip, known as Ponta de Rebordelo (Rich, 1942, pl. 26). For several kilometers along the coast east of Ponta da Caridade, the forest is more open and interspersed with small natural grassy clearings often containing scattered trees. In addition to the coastal forest fringe, there is a narrow belt that runs diagonally across the island and divides the *campo* into two independent units: the Campos da Beira on the south and the Campos de Pocoató on the north. The differences between these two *campos* are the result of their different elevation. The Campos da Beira are relatively high, dry, and parched in the summer, and remain above flood level in the rainy season. Scattered *carobeira* trees and patches of forest are common, but there are some large unbroken stretches of grass, which grow into a tall tangle that would soon become impassable if not burned over. On the low Campos de Pocoató, by contrast, the grass (also broken by clumps of forest) remains lush and green throughout the dry season, affording excellent summer pasture for the cattle, but is inundated during the winter months. The eastern half of this *campo* is swampy, overgrown with marsh plants, and unsuitable for habitation or for pasturing cattle.

Numerous streams drain into the coast but the majority are filled and emptied by tidal waters throughout a large part of the year, and have a constant flow only during the rainy season. The largest river at the present time is the Rio Goiabal, which would more accurately


50°15'
50°
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0 5 10 KM
• 1948 EXCAVATIONS
▲ NIMUENDAJÚ'S EXCAVATIONS
FOREST
SWAMPY LOWLAND
PATH
AFTER AAF PRELIMINARY BASE 895 D
AMAZON
0°15'
0°15'
PONTA DE REBORDELO
Pracutuba
MONDONGOS DA REDEMÇÃO
Furo das Palmeiras
C-15
C-14
CAMPOS DE POCOATÓ
C-12
C-11
C-13
Goiabal
Piratuba
CAMPOS DA BEIRA
C-9
Apani
C-10
CANAL PERIGOSO
C-3
Pocoató
Pente
LAGO ISCALVADO
LAGO MAÇARICO
C-4
C-6
C-7
C-5
C-8
Pacajá
PONTA DO CARAMOJU
0°
ILHA DAS MARECAS
EQUATOR
C-1
LAGO RAPOSÃO
AMAZON
PONTA DA CARIDADE
50°15'
50°
49°45'

Figure 151.—Caviana Island, showing major streams, vegetation pattern and location of archeological sites.

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be termed a strait, since its headwaters connect with those of the Furo das Palmeiras, giving uninterrupted access to both coasts. A breakthrough occurred about 1939, and has brought about considerable alteration of the vegetation of the area. The hardwood forest is dying and being replaced by palm and cane, and the dead giants rising above the smaller growth give the shores of the Furo das Palmeiras a desolate appearance. The Rio Goiabal is a broad stream, about 500 meters wide at its mouth. The Rio Piratuba, a tributary entering from the left, is the longest and largest navigable stream on the island, with its headwaters in the Campos de Pocoató. Two hours rowing above its mouth, it is 100 meters across, but by the time it emerges from the forest into the *campo*, it has shrunk to about 5 meters in width and is no longer navigable by dugout except at high tide.

At the eastern end of the island is another river, the Rio Pracutuba, whose size and navigability has made it important at present, as it was in aboriginal times. Smaller streams draining to the south coast include, from west to east, the Rio Pente, the Igarapé Pocoató, the Igarapé Pacajá, and the Rio Apaní. In all of these, the dry season water level varies 2 meters between high and low tide, with the result that the upper half to third of their courses are completely drained twice each day. Numerous streams of similar nature drain into the north coast, but because of their swampy shores and the general inhospitability of the area, they are little known. The largest of them, which drains the eastern part of the Campos de Pocoató is more of a swamp than a river, and goes under the name of Mondongos da Redemção.

In the region just east of Ponta da Caridade are three small, shallow lakes, Lagos Maçarico, Iscalvado, and Raposão. Although they are shallow, the water coming only to a man's waist, and contain numerous aquatic plants, they are abundantly stocked with fish including the giant *pirarucú*.

The flora and fauna of Caviana are comparable in most respects to those of Mexiana and Marajó. The forests contain the same kinds of animals and birds (except for one species of *onça*); the rainy season brings forth the same kinds of fruits; the lakes and rivers produce an abundance and variety of fish. These resources are still exploited by the *caboclos*, the majority of whom rely on hunting and fishing to furnish a large portion of their food.

THE ACAUAN PHASE

One of the archeological sites on Mexiana Island produced a complex of materials that was otherwise represented only by a single vessel from another Mexiana site and by a few sherds recovered from the bed of the Rio Jurupucú on northern Marajó Island. Although descriptive material is adequately represented at only one site, the pottery complex has unique features that are of considerable potential importance in comparative studies. This consideration, plus the large sherd sample from the excavated site, M-3—Acauan, seemed to warrant the establishment of a separate archeological Phase.

DESCRIPTION OF SITES AND EXCAVATIONS

SITE M-1—JACAREÚBA

A complete, excised bowl and another vessel broken in removal were discovered in 1947 at low tide in the mouth of the Igarapé Jacareúba, the largest stream east of Fazenda Nazaré, and near the western tip of Mexiana Island (fig. 150). Upon revisiting the site the exact location of discovery of the bowls could not be determined. The guides stated that in the past 6 years the bank had eroded badly and cut back over 3 meters. Tidal action at the time of the visit precluded examination of the beach. The only materials found in the area were totally unrelated to the aboriginal occupation of Mexiana and represented the modern culture of the *caboclo*. The complete specimen, owned by Sr. Felisberto Caamargo, has the following details:

Bowl A is a moderately deep, open vessel with rounded bottom, slightly outsloping sidewalls, and an externally thickened rim with flat top, squared lip with rounded corners. The mouth diameter is 25 cm., vertical sidewall height 7 cm., total vessel height 10 cm. The body wall thickness is 8 mm., rim thickness, 1.3 cm. Around the lip there are several flanges or lobes. The surfaces are badly waterworn but the original color appears to be a light tan on exterior with many light-gray fire clouds especially on the bottom. The interior is a drab brown, and is slipped and smoothed with some of the smoothing marks remaining. Red slip is on the flat top of the rim, extending over onto the exterior of rim; perhaps the red slip once covered the entire exterior but had been scoured off by the sand and water during its years in the mouth of the Igarapé Jacareúba. The paste has a medium-gray core fired light tan 1–2 mm. from the surfaces and is tempered with coarse ground sherd. The excision covers the exterior and shows careful, even and precise execution of the design. Excisions cut 2 mm. deep into the gray core of the paste while the incised lines do not go below the smoothed surfaces, never exceeding 1 mm. in depth. The vessel is a typical example of Acauan Excised—common vessel shape 1.

SITE M-3—ACAUAN

In the central part of the Island of Mexiana (fig. 150), on the north side of the Pirizal do Jacaré, a large habitation site runs parallel in an east-west direction to the marsh. It extends for a distance of 350 meters, but never exceeding 15 meters in width (fig. 152). Sporadic test excavations over this area, plus the exposure of many sherds on the surface, especially on the side toward the water, and a decided

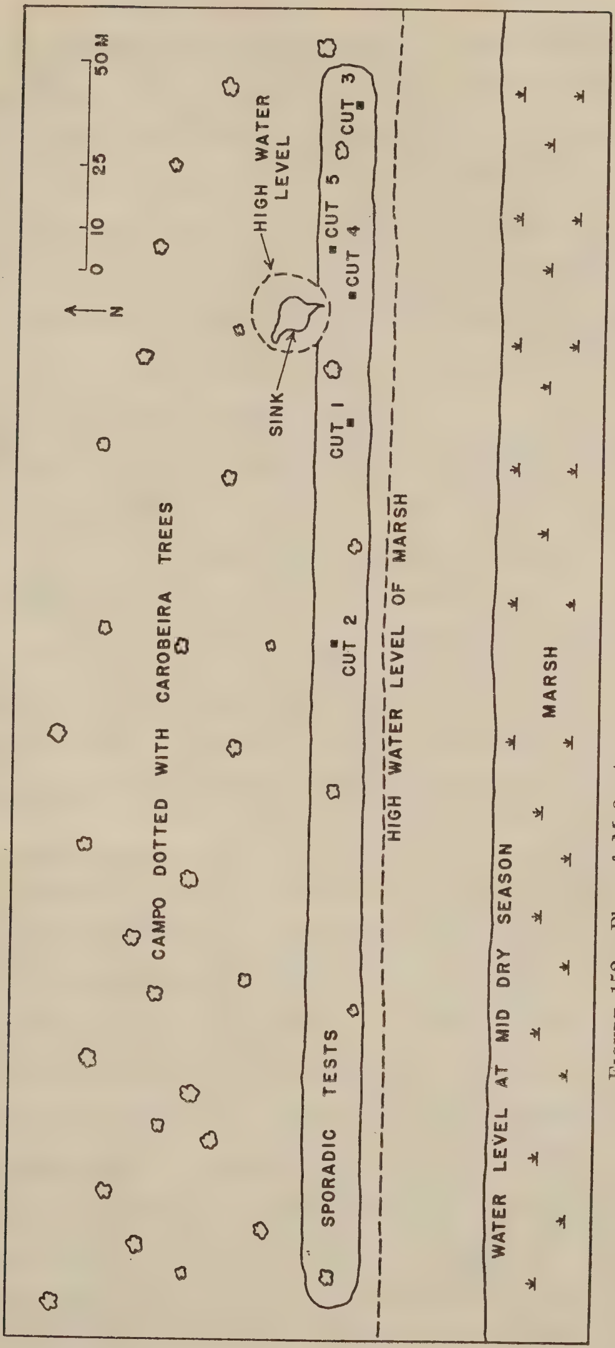
N
0 10 25 50 M
CAMPO DOTTED WITH CAROBEIRA TREES
HIGH WATER LEVEL
SINK
CUT 1
CUT 2
CUT 3
CUT 4
CUT 5
SPORADIC TESTS
HIGH WATER LEVEL OF MARSH
WATER LEVEL AT MID DRY SEASON
MARSH

FIGURE 152.—Plan of M-3—Acauan, a habitation site of the Acauan Phase.

difference in vegetation permitted an accurate delineation of the limits of the site. Seen from the north, or *campo* side, the site has only a slightly perceptible rise of 25 cm. above the adjacent terrain. The entire mound area is covered with a heavy growth of low, yellow-flowered shrubs (*matapasto*), as well as a more lush and verdant growth of grass (pl. 89). Near the eastern end on the northern limits of the site, there is a sink or former well. At the present time it is beaten in from the tramping of cattle, and the water occupies an area 8 meters in diameter and 50 cm. in depth during the middle of the dry season (pl. 89, *a*). The outer limits of the high water level of this well embraced an area 25 meters in diameter. Even in the present choked condition, the well had water while the *campo* and small *igarapés* dried up and the waterline of the Pirizal do Jacaré had receded 30 meters. It is impossible to determine absolutely whether this well is the result of the Indian occupation of Acauan or is of more recent origin. Although no visible remains existed of *caboclo* houses in the area, two fragments of modern, white, glazed industrial ware not exceeding 100 years in age came from just below the surface in cuts 2 and 3, making either derivation possible.

In addition to a surface collection and a series of sporadic tests in the western part of the site, five stratigraphic cuts, each 1.5 by 1.5 meters, were placed in various parts of the site. The exact location of each cut and its relationship to the other excavations are shown on the detailed site map (fig. 152). Except for cut 1, which was dug in 15-cm. levels, each cut was dug in 8-cm. levels. Since the soil conditions of all the tests were identical, they will be discussed as a unit for the entire site, followed by a listing of the cultural materials by level from each cut.

The first level, 0—8 cm., was always fairly loose due to the action of the shallow-rooted *matapasto* shrub and grass. However, all the dirt had to be broken first with a pick. Once broken, the soil of the site always crumbled into light, gray, clayey particles owing to the presence at one time of organic matter, whereas any part of the surrounding *campo* or sterile soil remained in hard lumps of clay. Scattered throughout the various levels producing sherds were a large number of lumps of hard fire-burnt clay with a red-orange color as well as a few, fine flecks of charcoal. The sherds were fairly abundant but extremely small in the first two to three levels. They frequently became sparser in the third level and the soil began to assume a darker gray color. The sterile soil is a dark, gray-black clay with small flecks of yellow resulting from the natural precipitation of iron concretions. The sterile clay was also more compact and wetter than the refuse layer. Although the sterile soil was easily distinguishable from the occupation zone, the tests were always carried to a sufficient depth to rule out the possibility of a reoccupation of the site. The appearance of sterile, natural clay at 16 to 24 cm. indicates that the existing height of the mound above the surrounding *campo* is the result of normal accumulation of refuse.

The following materials came from the various levels of the strata cuts:

Cut 1:
Level 0–15 cm.: 1,252 sherds, 130 burnt-clay lumps, small fragments of burnt mammal bones (nonidentifiable according to species).
Level 15–30 cm.: 574 sherds, 65 burnt-clay lumps (two showing split-cane and reed impressions), 1 charred animal bone fragment.
Cut 2:
Level 0–8 cm.: 264 sherds, including 2 modeled face rim adornos A and B (fig. 153), 17 burnt-clay lumps, 1 fragment of modern, white, glazed industrial ware with a blue stamped design (found 1 cm. below the surface).
Level 8–16 cm.: 1,011 sherds, 96 burnt-clay lumps.
Level 16–24 cm.: 233 sherds, 29 burnt-clay lumps.
Cut 3:
Level 0–8 cm.: 482 sherds, 11 burnt-clay lumps, 1 small chip of white, modern, glazed industrial ware (found 1 cm. below the surface).
Level 8–16 cm.: 1,091 sherds, 36 burnt-clay lumps.
Level 16–24 cm.: 123 sherds, 13 burnt-clay lumps.
Cut 4:
Level 0–8 cm.: 2,221 sherds, 58 burnt-clay lumps, 1 broken incised pottery spindle whorl (fig. 154), 1 pottery figurine head (fig. 155).
Level 8–16 cm.: 767 sherds, 27 burnt-clay lumps, 1 quartzite flake (fig. 156).
Cut 5:
Level 0–8 cm.: 911 sherds, 86 burnt-clay lumps, 1 clay stamp (fig. 157).
Level 8–16 cm.: 891 sherds, 56 burnt-clay lumps.

The collection from the surface and miscellaneous tests consists of 124 sherds.

Another low mound occurs along the north side of the Pirizal do Jacaré, 500 meters west of the western end of the main site of Acauan. For purposes of distinction this was designated as Mound 2. In an oval, 30 meters in an east-west direction and 10 meters in a north-south direction, the grass grew slightly higher than in the surrounding *campo* and the area was covered with the yellow-flowered bush, *matapasto*, as well as a few *carobeira* trees. This area rose 25 cm. above the surrounding area with the edge of the Pirizal do Jacaré only 3 meters away. The surface was much harder baked than that of the main site (Mound 1) and excavation was much more difficult.

A test cut, measuring 1.5 by 1.5 meters and controlled in 8-cm. levels, was placed in the center of the slight rise. Since the conditions repeated those found in the other part of M–3 and the sherds were much sparser and very badly eroded, no other excavations were made:

The materials from cut 6 include:

Cut 6:

Level 0–8 cm.: 435 sherds, 5 burnt-clay fragments, 1 small fragment of red ocher with the surfaces slightly worn.
Level 8–16 cm.: 88 sherds, 1 burnt-clay fragment.

The analysis of the cultural materials from M–3—Acauan is thus based on a total of 10,343 sherds from stratigraphic excavations, 124 sherds from the surface, and the following pottery and nonpottery artifacts:

Adorno A (*fig. 153, a*) consists of a face modeled on a rim of Piryzal Plain. A loop handle originally was attached vertically on the back of the head. The head leans inward toward the bowl interior but the face looks outward. It measures 3.4 cm. from side to side and 2.8 cm. wide. The nose and eyebrows are formed by a T-shaped applique 3–4 mm. high and the eyes and mouth by oval impressions in the clay. The mouth diameter of the bowl is 20 cm.

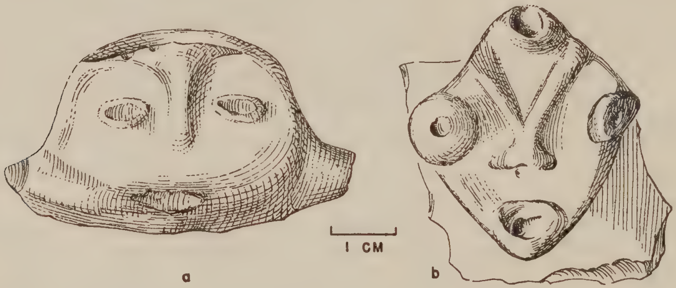

Figure 153.—Acauan Phase anthropomorphic or zoomorphic rim adornos of Piryzal Plain from M–3—Acauan.

Adorno B (*fig. 153, b*) is a modeled head attached to the rim exterior of a vessel of Piryzal Plain. The face is diamond shaped with the "coffee bean" eyes placed at the greatest width. A similar projection forms the mouth at the lower point and another is at the top of the head. The nose, thickened at the nostrils, joins the eyebrows to form a Y. The head is 3.8 cm. high and 3.5 cm. wide, and projects 2.4 cm. from the exterior vessel wall. A perforation 5 to 8 mm. in diameter, punched with a stick when the clay was wet, runs horizontally through the center of the head just above the level of the eyes.

Incised spindle whorl (*fig. 154*).—The spherical object, 4 cm. in diameter, had been punched through the center with a round stick leaving a perforation 5 mm. in diameter. Apparently the decoration was composed of two curvilinear units repeated on opposite sides, but with only slightly more than half of the object remaining it is not possible to reconstruct the complete design. Since the object is fairly large, it is probably a spindle whorl rather than a bead, which

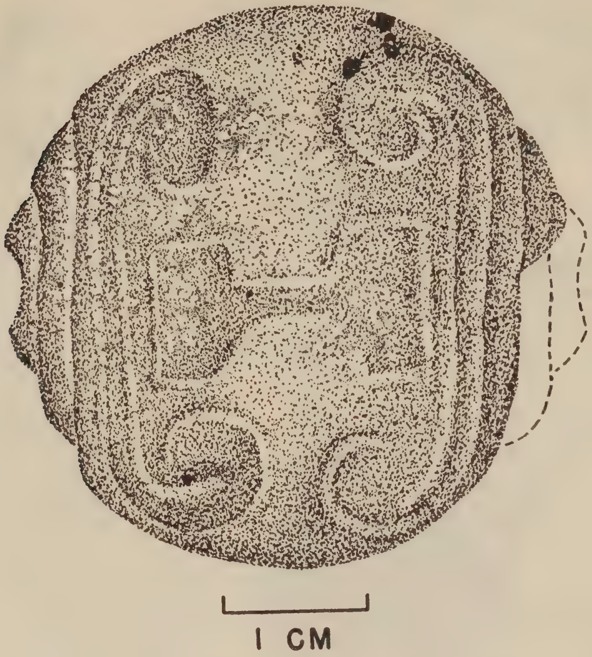

FIGURE 154.—Acauan Phase spindle whorl from M–3—Acauan.

would have shown wear on the ends where it would have rubbed against another bead. The paste is Piryzal Plain.

Figurine head (*fig. 155*).—Several sherds were assembled to form half a head, broken off at the neck. It is hollow, varying in wall thickness from 4–9 mm. tapering from 5.1 cm. wide at the neck to a narrow flat top. The existing fragment is 4.4 cm. high and 3.8 cm. wide from edge to nose. On the back a spiral design has been incised, perhaps suggesting some hair style, while on the front the face is shown by a T-shaped applique 5 mm. high and 1.7 cm. long forming the eyebrow and nose, and small applique eyes. The diadem across the forehead is similar to that on the figurine from J–12—Jurupucú (fig. 158). The paste is Piryzal Plain with the exterior well smoothed and the interior unsmoothed leaving the 1.5 cm. wide coils still visible.

Flake (*fig. 156*).—This quartzite flake has a distinct bulb of percussion with no retouch on the edges. It measures 5.5 cm. long, 4.0 cm. wide, tapering from a paper-thin edge to 1.1 cm. thick in the center and 1.6 cm. thick at the bulb of percussion.

Stamp (*figs. 157, 202, a*).—An almost complete circular pottery stamp with a handle is made of Piryzal Plain. The short, tapered handle measures 5 cm. long with the total length of the object 7 cm. The stamp is circular, measuring 6.2 cm. in diameter, and has a slightly convex surface. The center of the pattern is composed of two raised and irregular concentric circles 2.0 cm. and 3.7 cm. in diameter. Rays separated by grooves, 3 to 4 mm. wide and 2 to 3 mm. deep, emanate from the outer circle. Since some of the incisions forming the design are quite ragged and the convex contour would not work well in impressing wet clay, it is probable that

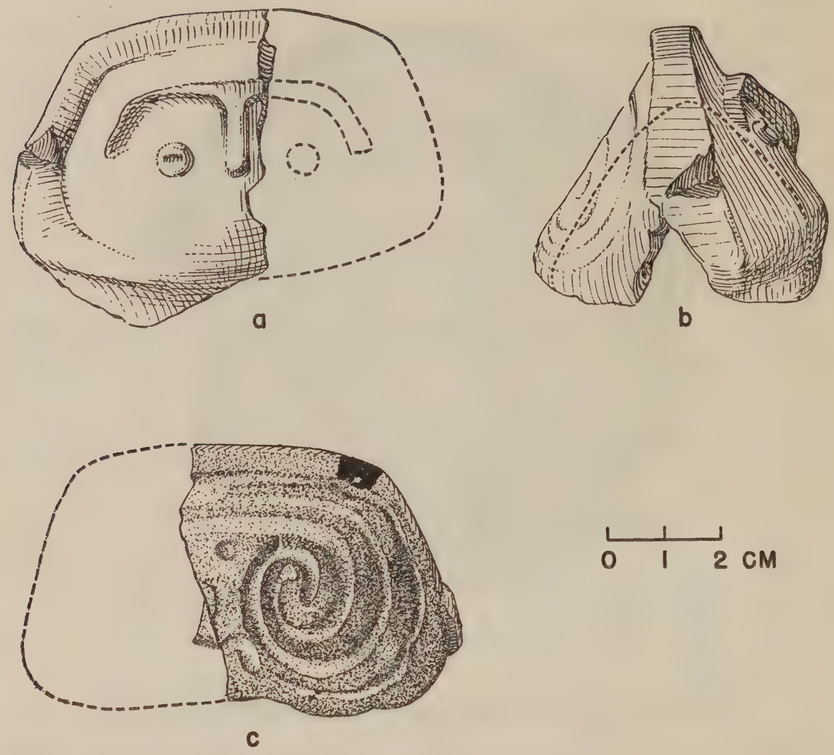

FIGURE 155.—Acauan Phase figurine head from M–3—Acauan.

this stamp was used to imprint designs on the body. In experiment, it worked quite well, especially on the arm, leg, or thigh where the slight give of the skin and flesh permits the entire design to be transferred easily and clearly. In further support of this interpretation is the fact that no sherds were found with stamped ornamentation.

SITE J–12—JURUPUCÚ

This is the only site of the Acauan Phase not located on Mexiana. It is on the Rio Jurupucú, which flows westward parallel to and several kilometers inland from the north coast of Marajó (fig. 48). The sherd sample was collected by Sr. Rodolfo Chermont, Jr., from the river bed. Although details of the situation could not be ascertained, the best interpretation seems to be that the Jurupucú has changed its course since aboriginal times and washed out a site so that the pottery is now under water in the bed of the river (cf. Site M–2, p. 457; Site C–15, p. 464). As a result of this submersion the paste has assumed a slightly different texture and color from that at the type site, M–3, but in vessel shape and surface technique the sherds are good examples of Acauan Phase pottery types.

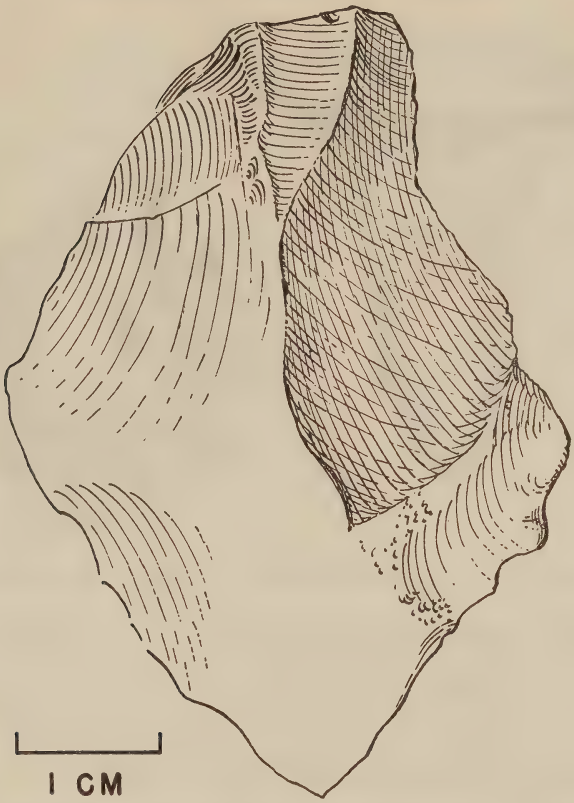

FIGURE 156.—Acauan Phase stone flake from M–3—Acauan.

The 21 specimens include a pottery figurine fragment, and 20 large sherds or complete vessels consisting of 12 Acauan Excised, 4 Carobal Incised, 3 corrugated related to Floripes Corrugated, and 1 Unclassified Stamped. Those specimens large enough to reconstruct shape are described below:

Figurine (*fig. 158*).—The head and upper body of a figurine are modeled with the head a solid mass affixed to the hollow body; the coil lines are unsmoothed on the interior and the body walls are 5 mm. thick. A hole, 4 mm. in diameter, passes through the neck from side to side. The profile is pyramidal, tapering from 6.5 cm. wide at the chest to 3.3 cm. at the neck, to 1.5 cm. at the top of the head. From the front view the neck is 4.2 cm. wide, the head 5.9 cm. wide at the ears and 4.2 cm. high. The exterior surfaces are smoothed and even, with the modeling simple but effective. Breasts are low nubbins, 1.0 cm. in diameter. The nose and eyebrows are formed by an applique T and the eyes by small, low applique nubbins. A ridge runs across the top of the head and down the sides to form the ears, which are perforated. Light incisions run vertically on the forehead. In style and general shape the figurine head is quite similar to the fragment found in cut 4, Site M–3—Acauan (fig. 155).

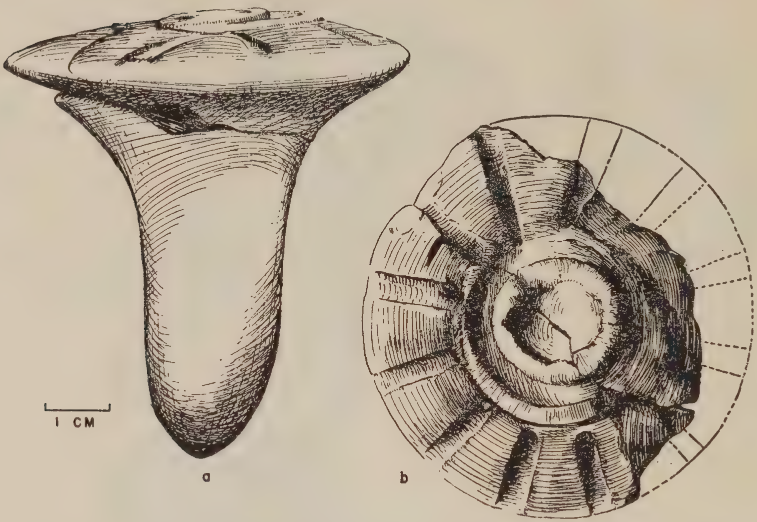

FIGURE 157.—Acauan Phase pottery stamp from M–3—Acauan.

Acauan Excised vessel fragments.—Small bowls or lids with the decoration on the exterior. Three specimens with only minor variations in size. They all have well-executed, curvilinear excision and a few incised lines on the flat exterior surface and on the short, vertical or slightly outslanting sidewall. Dimensions range as follows: diameter 11 cm., height 3 cm., body wall thickness 9 mm.; diameter 7.8 cm., height 2.5 cm., body wall thickness 4 mm.; diameter 16 cm., height (existing) 4 cm., body wall thickness 7 mm.

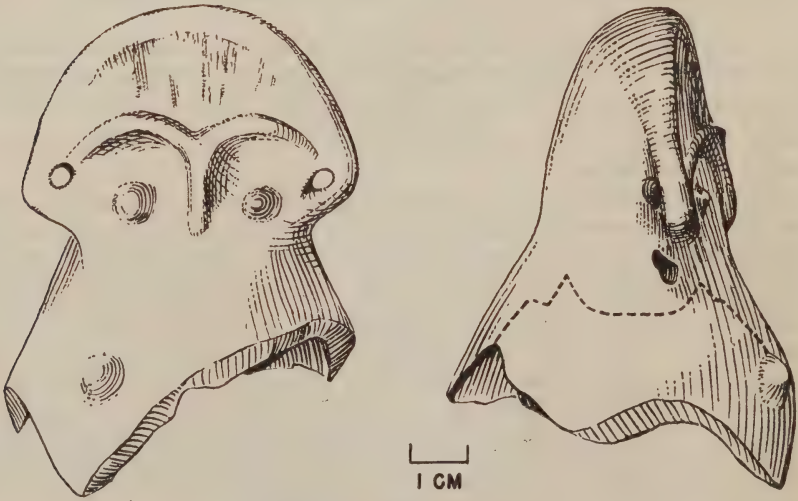

FIGURE 158.—Acauan Phase figurine from J–12—Jurupucú

Large, shallow, open bowls with decoration on the exterior of the rim and outsloping sidewall. The excised and incised designs are not well executed, with many lines overlapping and the excisions deep and irregularly applied. The bowls have a rounded bottom with a small, flattened base and a prominent shoulder at the junction of the outslanting wall (Acauan Excised, vessel shape 1). The rim is externally thickened with a rounded lip. Mouth diameter ranges from 24 to 40 cm. with the decoration on the 4 to 8-cm. wide body wall.

Miscellaneous body sherds.

Carobal Incised vessel fragments.—One almost complete fragment of a vessel of Carobal Incised shape 2, with a cross-hatched design in a band 5 cm. wide on the exterior of the outslanting body wall (pl. 97, *e*). Height 10 cm., mouth diameter 32 cm., body diameter 28 cm., base diameter 9 cm.

A bowl with incision covering the exterior (pl. 97, *c*). Carobal Incised shape 2, height 3.7 cm., with a flat base 12 cm. in diameter and a mouth diameter of 17 cm.

Neck fragment from a jar with heavy, unsmoothed coils 1.0–1.5 cm. wide on the interior (pl. 97, *b*). The exterior has a curvilinear and rectilinear incised design and a small applique nubbin.

Corrugated vessel fragments.—Round-bodied jar with a constricted neck and exteriorly thickened rim. The coils on the exterior of the body are unerased and pushed or pressed from the side to create corrugations. The neck is incised with parallel lines in triangular fields and the edge of the rim is nicked. One jar measures 18 cm. in mouth diameter and 35 cm. in body diameter (pl. 97, *a*). Another smaller fragment of the same style of surface treatment measures 32 cm. in mouth diameter (Floripes Corrugated, shape 2).

Stamped body fragment (pl. 97, *d*).—Part of the globular body of a vessel, with the exterior surface covered with marks made by a slightly curved, dentate stamp 2.6 cm. long and 2 mm. wide, divided into 10 points 0.3, 1.0 mm. wide.

DATA FROM OTHER INVESTIGATIONS

No other sites with materials comparable to the Acauan Phase have been reported, and no other private or museum collections with this type of pottery appear to exist.

ANALYSIS OF MATERIALS OF THE ACAUAN PHASE

Pottery Type Descriptions

All the Acauan Phase sherds and vessel fragments obtained from our investigations or studied in private collections (10,471 sherds and 19 vessel fragments) were classified into pottery types using the currently accepted binomial system of the first name referring to a local geographic proper name with the second term descriptive. The detailed pottery type descriptions, arranged in alphabetical order, follow:

ACAUAN EXCISED

Paste: This decorated type is on Piryzal Plain paste; see that description (p. 448) for details of temper, color, and firing.

Surfaces:

Color:

Exterior—Ranges from black to gray to dusty brown to tan to orange to red; majority reddish tan, with black the next most common color.

Interior—Range same as exterior but majority gray to black. Except for a few sherds red on the exterior which are also red on the interior, the remainder were light gray, black or tan on the interior.

Treatment:

Exterior—Surfaces well smoothed in most cases and floated before the design added. No slip. The majority of the sherds with red and black exteriors are very smooth and glossy, whereas those in the light-tan group retain slight surface irregularities and sometimes faint smoothing marks.

Interior—Majority smoothed but leaving irregularities. The fine water bubbles left pits which were easily subject to erosion. A few are scraped in the technique of Paciencia Scraped. Usually when the exterior is slick, well-floated and smooth to the touch, the interior is treated in a like manner.

Hardness: 3–4.

FORM:

Common vessel shapes reconstructed from sherds:

1. Open bowl with carinated or outslanting sidewalls and everted, exteriorly thickened rim (fig. 159–1).

Rim: Everted and exteriorly thickened with a rounded coil forming a round or tapered lip. Coil width 1.0–3.0 cm.; rim thickness 0.8–1.8 cm. Mouth diameter 12–40 cm.; majority 24–32 cm.

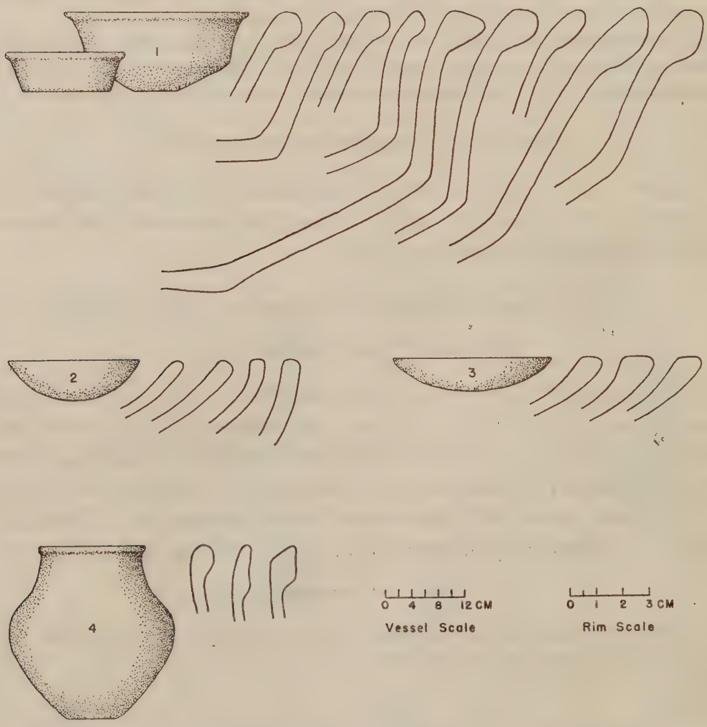

FIGURE 159.—Rim profiles and vessel shapes of Acauan Excised, Acauan Phase (Appendix, table 49).

Body wall thickness: 5–10 mm.; majority 7–8 mm.

Base: Flat with outslanting, straight sidewalls forming a sharp angle with the base; diameter 10–16 cm. The carinated bowl variety has a flattened base with outslanting, curved sidewalls; base diameter 6–12 cm.

Body dimensions: Body diameter 20–30 cm.; reconstructed height 6–12 cm.

Decoration: On sidewalls, occasionally extending to the lip, and on the bottom of the bowls in 80 percent of the cases.

2. Small, open bowl with curving sidewalls and unthickened rim (fig. 159–2).

   Rim: Unthickened, with tapered or rounded lip. Mouth diameter 12–27 cm.; majority 16–20 cm.

   Body wall thickness: 4–8 mm.

   Base: Rounded.

   Body dimensions: Reconstructed height, 6–8 cm.

   Decoration: On sidewalls and base, or just on sidewalls.

3. Shallow, open bowl with interiorly thickened rim (fig. 159–3).

   Rim: Interiorly thickened with flat top and curved lip. Thickness 10–13 mm. Mouth diameters 16–36 cm.; majority 22–28 cm.

   Body wall thickness: 5–8 mm.

   Base: Rounded.

   Body dimensions: Reconstructed height 4–6 cm.

   Decoration: On sidewalls and bottom, or just on sidewalls.

4. Jar with insloping to vertical, constricted neck and externally thickened rim (fig. 159–4).

   Rim: Externally thickened with flat or rounded coil, 7–12 mm. thick and 1.0–2.0 cm. wide; rounded or tapered lip.

   Body wall thickness: 4–12 mm.; majority 6 mm.

   Base: Flat, 6–10 cm. in diameter.

   Body dimensions: Diameter 20–28 cm.; neck height 5–8 cm.; reconstructed vessel height 20–30 cm.

   Decoration: On neck and body walls.

DECORATION:

Technique: The incised lines used as part of the design or as a border to the excised areas are sharp, deep, and generally broad (1.5–2.0 mm.), made with either a flat-ended or blunt-ended tool. The excision is produced by several techniques:

1. The vast majority of the sherds, whether because of different technique, greater erosion or both, have an evenly surfaced field covered with tiny pits resembling peckings. Probably this is a result of the technique of excision. The tool used to gouge out the clay in techniques 2 and 3 polished the surface enough to make it resistant to erosion, whereas the pecking out of the clay made small holes easily subject to erosion. The surface was leather dry before excised. Excised areas are small, no unbroken area being larger than 1 cm. square, and are usually cut to a depth of 2 mm.
2. Field cut back 1.0–1.5 mm. with narrow blunt tool leaving regular striations 1.5–2.0 mm. wide or roughly gouged surfaces. Gouging is sometimes extremely uneven, ranging from uncut spots to holes 2 mm. deep in a field not sharply set off from the adjacent surface by incised border lines.

3. Field slightly lowered by scraping or gouging with a small blunt tool. Gouges are generally parallel, made from one direction in a single field, but not the same direction in different fields. The incised border line was sometimes made before the gouges and sometimes afterward, when it serves to conceal any unequal length of the gouges.

Motifs: The decorated areas of excision combined with incised lines are confined to the exterior surface except in a few examples where they are carried onto the upper rim surface of flat-topped, exteriorly thickened rims. The bottoms of jars and bowls are decorated like the sides in 80 percent of the cases. The designs, layout, and motifs are similar to those of classic Ararí Excised of the Marajoara Phase; the most common are:

1. Alternating bands of cut and uncut areas with incised border lines (pl. 90, *b*, *e*, *g*).
2. Steps (pl. 90, *h*).
3. Eyes surrounded by curvilinear or rectilinear designs (pl. 91, *a–e*).
4. Curvilinear designs (pl. 91, *f–g*).
5. Spirals (pl. 91, *h–i*).
6. Lines with extensions on the end resembling hands.

Temporal differences within the type: None (Appendix, table 49).

Chronological position of the type: Present throughout the Acauan Phase.

CAROBAL INCISED

Paste: This decorated type is on Piryzal Plain paste; see that description (p. 448) for details of temper, firing, and color.

Surfaces:

Color: Exterior and interior—Range of variation from black to gray black, light gray-tan, tan or orange tan, with the majority a dusty gray-tan; 10 percent are light orange-tan on one surface, 35 percent gray or gray black on both surfaces, with the remainder distributed over the whole color range. Gray and gray black are more frequent on the interior than the exterior.

Treatment:

Interior: Identical to Piryzal Plain.

Exterior: Before the application of the incisions, the surface is smoothed and floated as in Piryzal Plain; see that type description for further details.

Hardness: 3–4.

Form:

Common vessel shapes reconstructed from sherds:

1. Shallow, open bowl with round bottom and exteriorly thickened rim (fig. 160–1).
   Rim: Thickened on the exterior with a coil, making the rim 1.0–1.5 cm. thick and 1.3–2.5 cm. wide. Lip rounded. Mouth diameter 26–30 cm.
   Body wall thickness: 5–12 mm.; majority 6–8 mm.
   Base: Rounded.
   Body dimensions: Reconstructed height 6 cm.
   Decoration: On exterior of body wall and sometimes on the rim and lip.
2. Flat bottomed, open bowl (fig. 160–2).
   Rim: Slightly thickened on the exterior with a rounded lip; thickness 1.0–1.2 cm.; mouth diameter 26–28 cm.
   Body wall thickness: 6–8 mm.

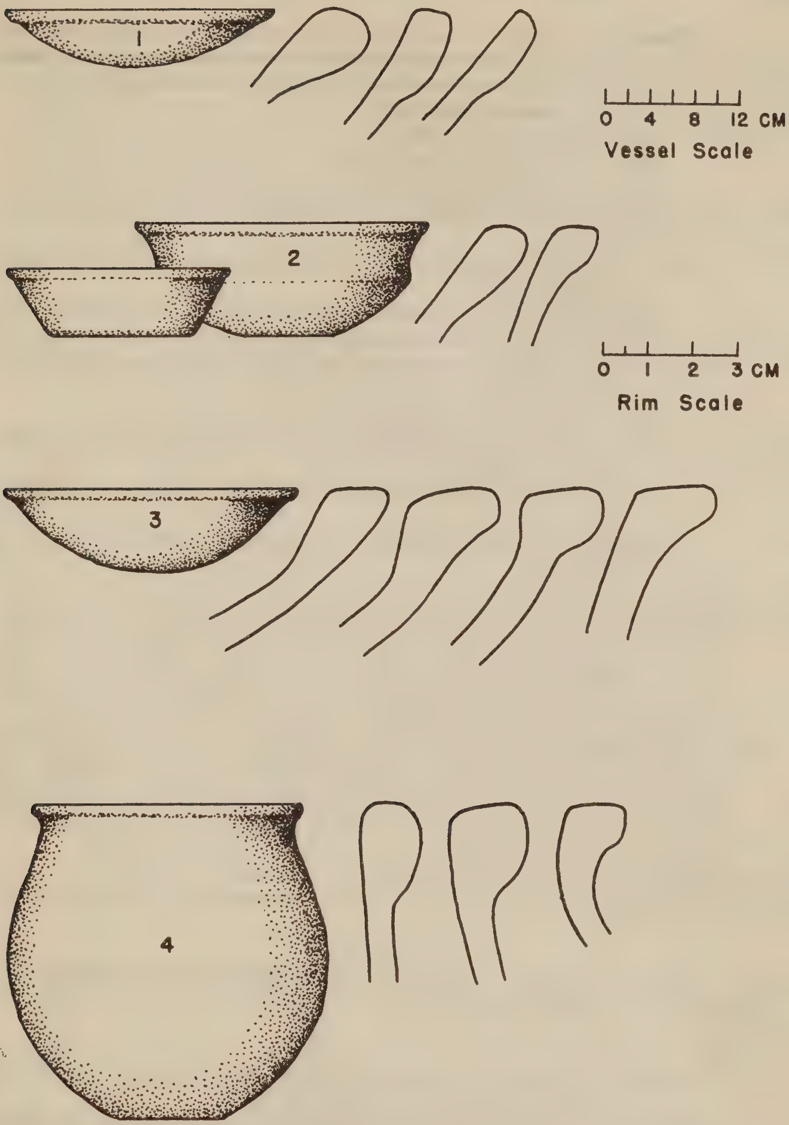
1
0 4 8 12 CM
Vessel Scale
2
0 1 2 3 CM
Rim Scale
3
4

FIGURE 160.—Rim profiles and vessel shapes of Carobal Incised, Acauan Phase (Appendix, table 49).

Base: Flat with angular, straight, outslanting sides or curved sides forming a slight carination. Base diameter 8–12 cm.

Body dimensions: Diameter 24–26 cm.; reconstructed height 6–10 cm.

Decoration: On exterior of body wall, sometimes onto the rim and lip.

3. Deep, open bowl with rounded bottom and everted rim (fig. 160–3).
   Rim: Flat top, interiorly thickened most commonly; sometimes thickened on the exterior; lip rounded; rim slightly everted; mouth diameter 26–28 cm.
   Body wall thickness: 8–10 mm.
   Base: Rounded, 6 cm. in diameter.
   Body dimensions: Reconstructed height 8–10 cm.
   Decoration: On exterior of body wall, sometimes on the flat top of the rim.
4. Ovoid jar with constricted mouth, flat base and externally thickened rim (fig. 160–4).
   Rim: Slightly everted and externally thickened with a heavy coil; rim 1.5–2.2 cm. thick and the coil 1.1–2.5 cm. wide; flat lip with rounded edges or rounded lip. Mouth diameter 20–30 cm.; majority 24 cm.
   Body wall thickness: 6–8 mm.
   Base: Flat with curved sidewalls joining at a very low angle; diameter 8–10 cm.
   Body dimensions: Body diameter 24–36 cm.; reconstructed height 28 cm.
   Decoration: Incisions limited to the neck area, sometimes extending onto the rim.

DECORATION (pl. 92, *a–k*):

Technique: Incised lines were applied when the clay was very wet. Typically, the incisions are wide, clear, prominent, and well-executed, with a blunt-ended instrument making a U-shaped channel which varies in width from 1.0–1.5 mm. and in depth from 0.5–1.0 mm. Sometimes a fine, pointed instrument was used forming sharp, fine-line incisions, 0.5 mm. wide.

Motif: The designs are applied on the exterior and occasionally extending upward onto the rim and lip. Motifs include parallel lines, spirals, and triangular or irregular shaped areas enclosing curvilinear or rectilinear motifs. With the exception of the hands and eyes, the motifs are similar to those of Acauan Excised.

TEMPORAL DIFFERENCE WITHIN THE TYPE: None (Appendix, table 49).

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Acauan Phase.

FLORIPES CORRUGATED

PASTE: This decorated type is on Piryzal Plain paste; see that description for details of temper, firing, color, etc.

SURFACES:

Color:

Exterior—Ranges from light gray to dark gray to orange tan to brick red. Majority are light gray or orange tan.

Interior—Same range as exterior; however, 10 percent of the sherds with tan or orange-tan exterior have a dull-gray interior.

Treatment:

Interior—Smoothed with all traces of coil lines removed, or scraped in the technique and manner of Paciencia Scraped.

Exterior—Except where corrugated, the surfaces are smoothed and well rubbed down with all irregularities removed, but leaving many small pits from water bubbles. A single row or sometimes two rows of unobliterated, uncorrugated coils border a corrugated zone. Coil width varies from 7–11 mm., majority 10 mm.

Hardness: 3–4.

FORM: Because of the limited number of rim and basal sherds, only two forms can be reconstructed with reasonable certainty. The limitation of the corrugations to a band on the body of the vessel in some instances suggests that some of the rims and vessel shapes attributed to Piryzal Plain may also apply to Floripes Corrugated (e. g., Piryzal Plain, shapes 1, 2, 3, and 4).

Common vessel shapes reconstructed from sherds:

1. Open bowl with straight, outslanting walls and unthickened rim (fig. 161–1).

   Rim: Unthickened, flat top with rounded corners; mouth diameter 28 cm.

   Body wall thickness: 4–11 mm, majority 6–7 mm.

   Base: Flat, sometimes slightly thickened (10–14 mm.) or on a short pedestal (6–12 mm. high), with the sidewalls forming an angle of 50–65 degrees. Diameter 11–18 cm.

   Body dimensions: Reconstructed height 12–16 cm.

   Decoration: Bands of corrugations extending to within a few centimeters of the rim and either to the base or a few centimeters from it and usually bordered with either uncorrugated coils or smoothed areas.

2. Globular-bodied jar with constricted neck, thickened and everted rim (fig. 161–2; pl. 97, *a*).

   Rim: Everted, externally thickened, with a flat top and rounded or tapered lip. Thickness 1.2–1.8 cm.; mouth diameter 12–26 cm.

   Body wall thickness: 5–10 mm, majority 7–8 mm.

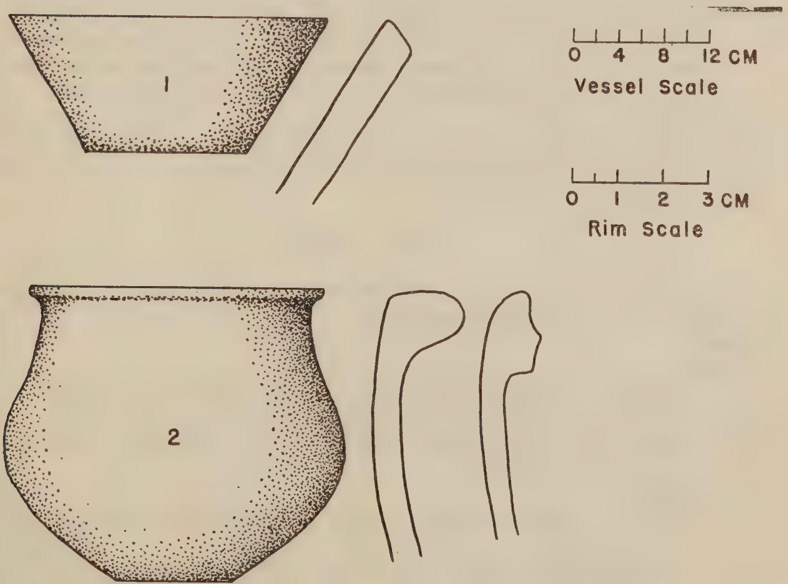

FIGURE 161.—Rim profiles and vessel shapes of Floripes Corrugated, Acauan Phase.

Base: Flat.

Body dimensions: Reconstructed height 20–28 cm.; body diameter 20–30 cm.

Decorations: Corrugations in most cases limited to the body and extending to the base or to within a few centimeters of it, with the neck either plain or incised.

DECORATION (pls. 93, 94):

Technique: Corrugations vary in size from fine (1.5–4.0 mm. high, 3.0 mm. wide, 3.0–4.0 mm. long) to medium (1.5–4.0 mm. high, 4.0–6.0 mm. wide, 3.0–5.0 mm. long) to large (1.0–5.0 mm. high, 7.0–11.0 mm. wide, 5.0–12.0 mm. long). Corrugations made by first laying down a coil varying in width from 3–11 mm. While the coil was still wet, the end or side of the thumb or finger was pressed down from the upper edge to form individual globs. The work was done as each coil was added so that the overlap of each glob on the one below gives a row of corrugations an undercut appearance. Care of workmanship, angle of pressure, point of pressure and wetness of the clay seem to control the evenness and regularity of the corrugations. Sometimes the corrugated surface has been rubbed over lightly to remove the excess clay or to level off the area. When this was done the surface of each glob became slightly flattened. Such a flattening of the surface occurs in 25 percent of the fine to medium corrugations and in 5 percent of the large corrugations.

Motifs: From the fragmentary sherds the corrugations appear to be in bands around the vessel, extending to the base or within a few centimeters of the base and rim. In some cases the corrugations are bordered on upper and lower limits by a row or rows of uncorrugated coils or by a smoothed but uneven and irregular surface. It is possible that on jar shape 2 the neck was commonly incised in the style of Vergal Incised or something similar (pl. 97, *a*). The small number of rims that can be identified as Floripes Corrugated indicates that this treatment was confined to the body of the vessel.

TEMPORAL DIFFERENCE WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Acauan Phase, with a slight decline in popularity.

PACIENCIA SCRAPED

PASTE: This decorated type is on Piryzal Plain paste; see that type description for details of temper, color, and firing.

SURFACES:

Color:

Exterior—Ranges from light tan to mouse-gray with the majority tan. The tan surfaces are commonly spotted with gray fire clouds.

Interior—Same range of variation as on the exterior, but with the majority light tan.

Treatment:

Exterior—Surface irregular and full of small holes due to water bubbles resulting from working the clay when too wet. In a few cases the surface was too dry when scraped so that the impressions are barely visible. On the few sherds where only the interior is scraped, the exterior is rough, irregular, and uneven.

Interior—Either scraped or rough, irregular, and uneven.

Hardness: 3–4.

Forms:

Common vessel shapes reconstructed from sherds:

1. Carinated bowl with everted, thickened rim (fig. 162–1).
   - *Rim:* Externally thickened, everted, usually with a flattened top and rounded lip. Flat top 1.3–2.0 cm. wide; rim 1.0–1.5 cm. thick. Mouth diameter 24–28 cm.
   - *Body wall thickness:* 5–8 mm.; majority 6 mm.
   - *Base:* Flat, with sides forming a strong angle with bottom and usually forming a short pedestal 5–8 mm. high; base diameter 14–16 cm.
   - *Body dimensions:* Reconstructed height 8–12 cm.; body diameter 22–26 cm.
   - *Decoration:* Scraped on exterior and interior; a few scraped on exterior surface only.
2. Large, ovoid jar with slightly constructed neck and thickened rim (fig. 162–2).
   - *Rim:* Thickened externally with a large coil and usually rounded; a few have a flat top with rounded lip. Rim is 1.5–1.8 cm. thick; 2.0–3.2 cm. wide. Mouth diameter 32–40 cm.
   - *Body wall thickness:* 5–8 mm.; majority 6–7 mm.
   - *Base:* Flat with curving sides; diameter 14–16 cm.
   - *Body dimensions:* Body diameter 36–46 cm.; reconstructed height 30–38 cm.
   - *Decoration:* Scraped on exterior and interior; a few scraped on exterior surface only.

Decoration (pl. 96, *a-i*):

Technique: Sherds were classified as Paciencia Scraped if both surfaces or the exterior surface only were scraped (those with scrapings only on the

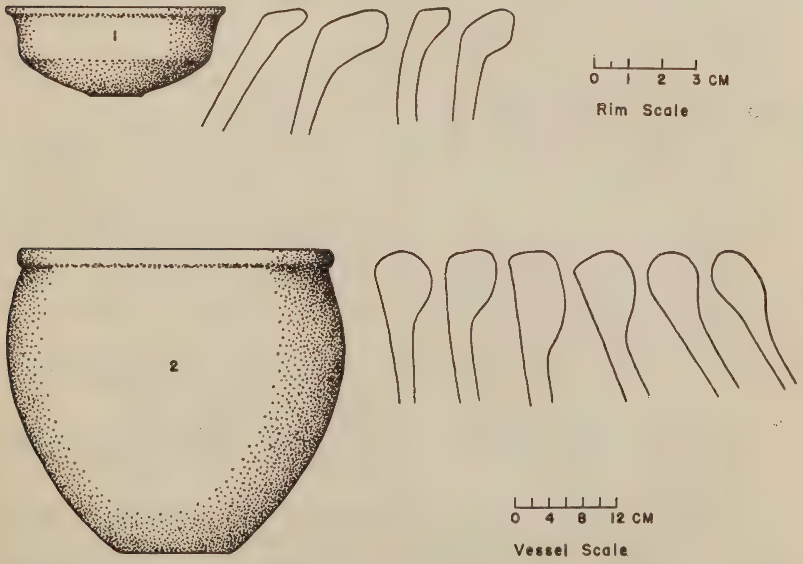

Figure 162.—Rim profiles and vessel shapes of Paciencia Scraped, Acauan Phase (Appendix, table 49).

interior were classified as Piryzal Plain on the grounds that they could not serve as decoration). The scraping was done with an evenly serrated comb that left parallel, flat-bottomed troughs 1–2 mm. deep and 2–4 mm. wide, separated by fine ridges. Although usually clear, there are a few examples where the scrapings are barely visible.

Motif: The scrapings typically follow the circumference of the vessel parallel to the rim. As in the case of Pocoató Scraped of the Mangueiras Phase, the presence of similar scrapings on the vessel interior only suggests that this form of decoration is developed from what was originally simply a method of surface finish.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None observable (Appendix, table 49).

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Acauan Phase.

PIRYZAL PLAIN

PASTE:

Method of manufacture: Coiling with oval-shaped, slightly flattened coils, 1 cm. wide, laid so as to overlap slightly (pl. 95, *m*).

Temper: Finely ground sherd, mostly particles difficult to see with the naked eye; a few particles up to 2 mm.

Texture: Well mixed, fine, compact paste with the temper evenly distributed. Tensile strength extra hard, extremely difficult to break any sherd thicker than 5 mm. Cleavage irregular, fine and granular. All sherds have a high, clear ring when tossed against each other.

Color: Ranges from a solid, light orange tan to a complete gray or gray black to a zoned core of gray or gray black with both exterior and interior surfaces a light orange. These orange bands are narrow, ranging from paper thinness to 2 mm. 90 percent of all sherds are the zoned variety. Frequently the finely ground sherd temper of orange or tan specks is distinctly visible in the sherds with gray cores.

Firing: Majority are incompletely oxidized. Fire clouds are common and the surface color varies immensely on the same sherd.

SURFACES:

Color: Exterior and interior—General hue of the whole pile of sherds is a dusty gray tan; however, individually the sherds range from black to gray black to light gray tan to tan to orange tan. Only 10 percent are a light orange on one surface; 35 percent are gray or gray black on both surfaces; and the remainder are divided into the whole color range. Gray and gray black are more common on the interior than on the exterior.

Treatment: Exterior and interior—All the sherds have fine pits from water bubbles in the clay, making the surfaces look porous. Three distinct surface treatments are typical:

1. 75 percent are smoothed and even surfaced from scraping, smooth to the feel but not slick. Usually both surfaces are treated the same, but on a few the interior is rougher and more irregular.
2. 15 percent are irregular and rough on both surfaces; body wall thickness varies 2–3 mm. on each sherd. Typical of the thicker body sherds.
3. 10 percent of the sherds are a slick, semilustrous, well-polished variety with smoothing and polishing tracks still visible on some of the sherds. Of this group only one-fourth are smoothed on both surfaces; the others are smoothed on the exterior of jars and interior

of bowls with the opposite surface scraped, leaving irregular, prominent tracks.

Hardness: 3–4.

FORM:

Common vessel shapes reconstructed from sherds:

1. Shallow, open bowls with everted, thickened rim and outcurving sides (fig. 163–1).

   Rim: Externally thickened rim with rounded lip varying from a thickening of 8–10 mm. to a heavy coil making the rim 1.5 cm.

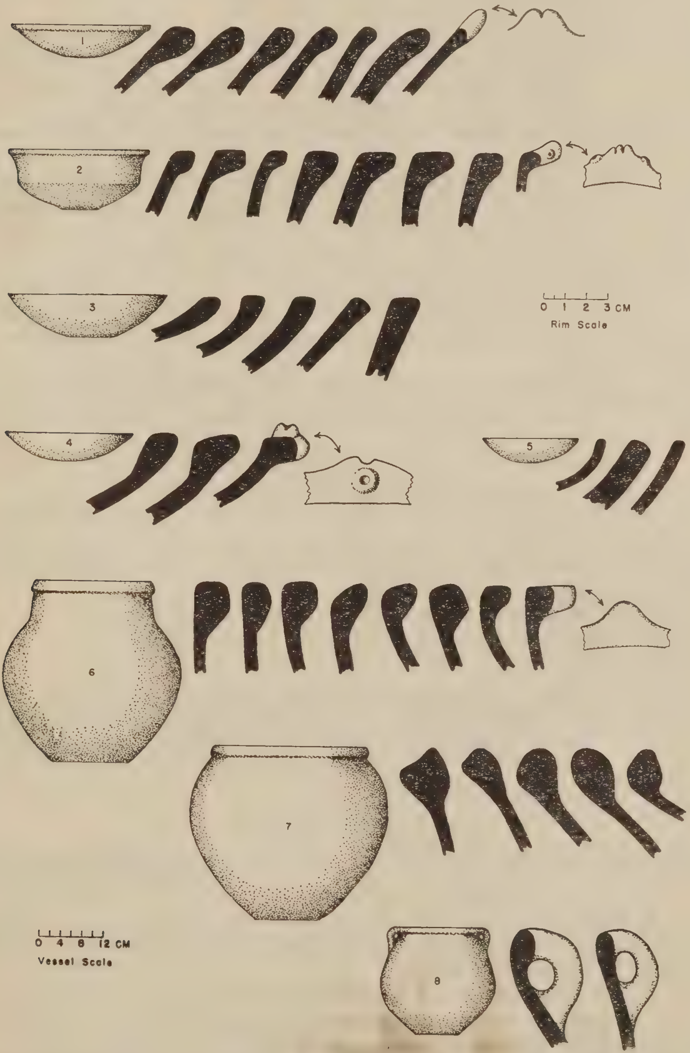

FIGURE 163.—Rim profiles and vessel shapes of Piryzal Plain, Acauan Phase (Appendix, table 50).

thick and 1.5–2.5 cm. wide. Mouth diameters 8–38 cm.; majority 22–26 cm.

Body wall thickness: 4–13 mm.; majority 6–7 mm.

Body dimensions: Reconstructed height 4–8 cm.

Base: Rounded, diameters 8–12 cm.

Appendages: Sometimes lobes, scallops and nubbins are affixed to the lips (pl. 95). These protrusions extend 1.0–1.5 cm. beyond the rim, are tapered and often have a vertical notch along the tip. The nubbins average 8–12 mm. in diameter, 2–5 mm. high and are usually in the flat top of the lobe.

Occasional decoration: Sometimes the lip of the thickened, everted rim is incised or impressed with vertical or diagonal notches ranging from 2–4 mm. wide and 3 mm. deep and from 3–10 mm. apart. A few are sometimes crosshatched (pl. 95).

2. Slightly carinated, open bowls with everted, thickened rims (fig. 163–2).

Rim: Rounded lip, flat top, externally thickened with a heavy coil ranging in thickness from 1.2–2.2 cm. Mouth diameters 9–40 cm., majority 24–28 cm.

Body wall thickness: 4–10 mm.; majority 6–7 mm.

Body dimensions: Body diameter 22–24 cm.

Base: Flat, straight, outslanting sides forming a sharp angle with the base; a few have a slight heel or pedestal. Diameter 10–16 cm.

Appendages: Adornos or lobes with nubbins and "eyes" occur on a small percentage of the rim sherds; see the description under vessel form 1.

Occasional decoration: The rounded lip is sometimes incised or notched in a similar manner to vessel form 1.

3. Open bowl with slightly thickened rim, curved sides (fig. 163–3).

Rim: Slightly thickened, 2–4 mm. more than the body wall thickness, flattened top with rounded edges. Mouth diameters 14–32 cm.; majority 30–32 cm.

Body wall thickness: 4–13 mm.; majority 6–7 mm.

Body dimensions: Reconstructed height 8–10 cm.

Base: Slightly flattened; diameters 8–12 cm.

4. Open bowl with thickened rim (fig. 163–4).

Rim: Thickened with a heavy coil, forming a flat top, rounded to flattened lip, ranging from 1.5–2.0 cm. thick. Mouth diameters 26–28 cm.

Body wall thickness: 8–11 mm.

Body dimensions: Reconstructed height 6–8 cm.

Base: Rounded, diameters 8–10 cm.

Appendages: Rim adornos, lobes and nubbins sometimes on the rim. See details under vessel form 1.

5. Small, open bowl with curving sides (fig. 163–5).

Rim: Unthickened, slightly rounded. Mouth diameter 6–20 cm., majority 14–18 cm.

Body wall thickness: 5–15 mm.; majority 7–8 mm.

Body dimensions: Reconstructed height 6–8 cm.

Base: Rounded, diameters 8–10 cm.

6. Large jar with vertical to insloping neck, exteriorly thickened rim (fig. 163–6).

Rim: Externally thickened with a large coil, usually a flat top and a rounded lip; thickness varies from 1.5–2.0 cm., length 1.5–2.5 cm. Mouth diameter 18–36 cm.; majority 26–30 cm.

Body wall thickness: 5–7 mm.

Body dimensions: Neck height 6–8 cm.; body diameters 26–44 cm.

Base: Flattened, diameter 10–16 cm. with the majority 14–16 cm. The sidewalls join the base with a slight curvature to a straight angular attachment with a few forming a slight pedestal and a prominent heel 5–10 mm. high.

Appendages: Sometimes a small pointed to rounded lobe is added to the lip.

Occasional decoration: Vertical incisions or notches are sometimes on the exteriorly thickened rim in the same style as described for vessel form 1.

7. Large globular jar without a neck and with a thickened, incurved rim (fig. 163–7).

Rim: Externally thickened with the addition of a large coil ranging from 1.5–2.5 cm. thick and 2.0–2.5 cm. wide. The lip is usually rounded. Mouth diameter 18–34 cm., majority 26–30 cm.

Body wall thickness: 5–8 mm.

Body dimensions: Body diameter 26–44 cm.; majority 34–38 cm.

Base: Flattened or slight pedestal 5–10 mm. high; diameters 10–16 cm.

8. Small jar with an insloping neck, loop handles and a slightly thickened rim (fig. 163–8).

Rim: Slightly thickened on the exterior with a rounded lip; thickness 8–15 mm; mouth diameters 8–18 cm.

Body wall thickness: 5–7 mm.

Body dimensions: Diameter 18–24 cm.

Base: Flattened or a slight pedestal 5–10 mm. high; diameter 6–8 cm.

Appendages: Handles of looped coils are attached from the lip to the shoulder, ranging in length from 3–5 cm. Cross section of the coil is either oval, measuring 8–10 mm. thick and 11–13 mm. wide or round, measuring 7–13 mm. in diameter. Handle extends 1–2 cm. from the vessel. Point of attachment is broad and tapered.

TEMPORAL DIFFERENCE WITHIN THE TYPE: Jar shape 6 increases slightly in popularity, while bowl shape 2 decreases in popularity from the early to late part of the Acauan Phase sequence (Appendix, table 50).

CHRONOLOGICAL POSITION OF THE TYPE: The dominant pottery type throughout the Acauan Phase.

VERGAL INCISED

PASTE: This decorated type is on Piryzal Plain paste; see that description for details of temper, firing, and color.

SURFACES:

Color: Exterior and interior—Light tan to orange tan; majority a dusty, light tan. A few tend to be dark gray to black on the interior and a few are chocolate brown on the exterior.

Treatment:

Interior—Smoothed, but uneven and irregular; rough to the touch. Some are scraped on the interior similar to Paciencia Scraped. Small holes and pits in the surface remain from water bubbles.

Exterior—Smoothed, but uneven and irregular. On a few sherds the surface was swiped over after incising to remove the excess particles of clay.

Hardness: 3–4.

FORM: Since no complete vessel or identifiable rim sherds were found, the forms cannot be reconstructed. A few base and body sherds suggest that one form was similar to vessel shape 2 of Piryzal Plain—slightly carinated, open bowl with everted, thickened rim (fig. 163–2). There is also evidence that Vergal Incised decoration was sometimes confined to a jar neck (cf. pl. 97, *a*).

Body wall thickness: 5–8 mm., majority 6 mm.

Body dimensions: Sherds too small to reconstruct diameters.

Base: Flat with slight pedestal 7–11 mm. high; straight sidewalls outslanting at a sharp angle. Diameter 10–16 cm.

DECORATION (pl. 96, *j–s*):

Technique: Deep grooves cut into the clay when very wet. Depth of groove 1–3 mm., majority 2 mm.; width 1.0–3.5 mm., majority 1.5–2.0 mm. Grooves typically arranged in V's or Z's lying on their sides, with the arm of the V or Z varying from 1–4 cm. in length.

Motif: Sherds are too fragmentary to reconstruct the extent of the design. Apparently these grooves were arranged in parallel rows around the circumference of the vessel. No rim fragments were found with the design on them, but base fragments with straight, outslanting sides begin the incised designs on the sidewall 7–10 mm. above the base.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None observable.

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Acauan Phase.

UNCLASSIFIED DECORATED

In addition to the well-defined decorated types of the Acauan Phase, there are a few minor techniques present on a handful of sherds, all from M–3—Acauan. These include painting, punctation, applique, and grooving.

PAINTED RED:

1. Band along rim edge of open bowls. Limited to flattened lip on 2 sherds and extending 1.2 cm. down both surfaces on 1.
2. Band along rim exterior of open bowls. Three sherds.
3. Narrow stripe on interior, 4–7 mm. wide. Two body sherds.
4. Areas of red. Thirteen small body sherds have traces of red paint on the interior or exterior surfaces.

PUNCTATE:

1. Irregularly spaced, elongated punctates, 7–10 mm. long, 2–3 mm. deep. Ten body sherds (pl. 92, *n–o*).
2. Trough-shaped punctates in irregular rows. One body sherd.
3. Rounded punctates made with blunt tool, depth 2–4 mm. Rim sherd with single row along center of exterior thickening and 5 body sherds (pl. 92, *m*).
4. All-over punctation with a serrated tool 2 cm. wide having 7 closely spaced teeth. One body sherd.

APPLIQUE:

1. Rims with lobes ornamented with one or two nubbins, often with a depressed center. Four sherds (pl. 95, *e*).
2. Rounded rib 5 mm. wide, 2–4 mm. high. Four small body sherds.
3. Oval or circular nubbin. Two body sherds.
4. Anthropomorphic features. One nose fragment and one crude face.

Grooving:

1. Deep, almost parallel grooves 8 mm. wide on exterior. One body sherd (pl. 92, *l*).

Pottery Artifacts

No significant classification can be made with the few pottery artifacts from the Phase. Two figurine fragments from different sites show similar characteristics of a trianguloid head with stylized features, a diadem across the head and T-shaped eyebrows and nose (figs. 155 and 158). A pottery stamp was probably used for decorating the skin (fig. 157). Half of an incised ball perforated through the center may represent a spindle whorl (fig. 154).

Nonceramic Artifacts

Only 1 nonpottery artifact was found at the Acauan Phase sites. It is a small stone flake struck from a larger core by percussion and showing no conscious retouching. The edges are slightly nicked from use, probably as a knife (fig. 156).

CERAMIC HISTORY

The pottery of the Acauan Phase classifies into a series of decorated types and one plain ware, Piryzal Plain, which could not be subdivided into varieties that show change through time. The Piryzal Plain from the lowest levels at M–3 is indistinguishable from that of the uppermost levels. This inability to break down the single plain pottery type of the Acauan Phase probably stems from the short period of time represented by the known sites.

In spite of the large pottery sample of 10,471 sherds and the presence of several well-defined pottery types, no consistent trends in popularity could be detected when the percentage occurrences per level in the five stratigraphic cuts were calculated separately and compared (Appendix, table 48). On the possibility that the individual cuts produced too small a sample to reveal such changes, the totals for each level were combined with those in the corresponding level of the other cuts (except cut 6 at Mound 2) and the percentage occurrence of the pottery types was recomputed. This lumping seemed warranted by the absence of evidence of disturbance and the absence of any indication that the entire site was not inhabited simultaneously. The only consistent trend brought out by this effort is a decrease in the frequency of Floripes Corrugated from 29 percent in the lowest level (16–24 cm.) to 24 percent in the middle level (8–16 cm.), to 18 percent in the upper level (0–8 cm.). Since none of the other sites are represented by similar stratigraphic excavations or even an unselected sample, it is impossible to establish their temporal relationship to M–3 by seriation.

The pottery classification and analysis does show, however, an interesting point on the popularity of decorated wares versus plain wares in the habitation refuse, which is quite different from the other cultures studied in this report. Of the 9,820 sherds from the five strata cuts placed in Mound 1 of M-3—Acauan, 3,783 or 38.5 percent were decorated sherds of one type or another. By far the most popular decorated pottery type is Floripes Corrugated, accounting for 2,012 or 20.6 percent of the sherds from these same cuts. This high popularity of decorated pottery is unique in the habitation sites of the Lower Amazon. The closest approach was a few cemetery sites of the Marajoara Phase where the decorated pottery comprised an average of 25 percent of the total sherds. This discrepancy is somewhat modified if it is recognized that the most common decorated pottery type, Floripes Corrugated, is probably more of an ordinary utilitarian ware than were the other decorated types. Floripes Corrugated vessel shapes include cooking jars and small open bowls, probably used for cooking, eating or drinking; however, the time and technique involved in carefully manipulating the surfaces must be taken into consideration compared to the plain utilitarian wares of the other Phases in the Lower Amazon.

As another effort to discover change within the pottery of Acauan Phase, the corrugation on Floripes Corrugated was classified into fine, large, and medium (pls. 93, 94) and the percentage occurrences were plotted by levels. Again, no change through time was evident and the differences in size of corrugations appear to represent variations of the individual potter rather than cultural change. A similar effort was made with design elements of Acauan Excised and Carobal Incised with the same negative results.

Since none of these approaches seemed to reveal any changes in Acauan Phase pottery through time, a final effort to detect these was made by classifying the rim sherds into generalized vessel shapes and tabulating them according to their stratigraphic position. Only Piryzal Plain had a sufficient number of rims to permit a percentage analysis, and even in this type several of the less frequent shapes could not be used. This tabulation revealed changes in the frequency of some of the more common vessel shapes. Piryzal Plain shape 6, a short-necked, round-bodied jar with an externally thickened rim, shows a slight increase in popularity from the lowest to the uppermost levels in the following cuts: cut 1 from 25 percent to 28 percent; cut 2 from 20.0 percent to 27.8 percent to 45.4 percent; cut 4 from 20.5 percent to 25.2 percent; and cut 5 from 21.3 percent to 29.4 percent. The other jar forms either did not show consistent trends from one strata cut to the other, or the sample was too small to be considered accurate. The only Piryzal Plain bowl form to show any consistent change is shape 2, a carinated bowl with an externally thickened, flat-topped rim with rounded lip. This form tends to decrease in popularity from the lowest level to the surface in the following manner: cut 1 from 28.2 percent to 21.6 percent; cut 2 from 30.0 percent to 11.1 percent to 18.2 percent; and cut 4 from 38.3 percent to 9.7 percent. Cut 3 could not be used in either of these two analyses. Although the second level had sufficient rim sherds for a fairly accurate percentage calculation, the uppermost level had only 16 rim sherds with the result that the relative frequency produced an exaggerated figure when converted into percentages.

The absence of any but these tenuous indications of ceramic change at M–3 suggests that this site was occupied for a relatively brief period of time. In an effort to check this conclusion, we applied the formula for computing site duration on the basis of sherd refuse accumulation developed for comparison of the Tropical Forest Phases on Marajó. Since this formula applies only to communal houses, the sherd density at M–3 first had to be examined from this point of view. Habitation sites of the Ananatuba and Mangueiras Phases, which appear to have used communal dwellings, produce more than 600 sherds per 15-cm. level in an excavation 1.5 by 1.5 meters. At M–3, the density for a comparable area and depth is between 754 and 2,988 sherds, and although the sherds are generally small, it does not seem possible that even allowing for this smaller size such density could have been produced by a scattered individual family house pattern. If such a house type was used, the dwellings were so closely spaced that the effect would have been the same as with communal dwellings.

The estimates from five excavations in Mound 1 and 1 in Mound 2 range from 20 to 115 years (table R). This extreme variation is not as unfavorable to the use of the formula as it first appears. The lower extreme is the duration from the single cut in Mound 2, which appears to be a brief extension of the village. The upper extreme is an area near the sink where sherds are unusually abundant, and inspection of the results from the other 4 cuts on Mound 1 shows that this density is not typical of the site. The other 4 estimates range from 58 to 71 years, giving only 13 years' variation. Averaging these gives an estimated duration for M–3 of 66 years.

A means of evaluating this conclusion comes from evidence of contact between the Acauan Phase and the Mangueiras Phase (pp. 540 ff.). This is discernible at the Mangueiras Phase sites of C–3, J–17, and the conclusion of J–5. The estimated duration of C–3 (averaging the results from the 2 cuts) is 74.2 years (table F). J–17 is probably at least partly contemporary with C–3, and J–5 immediately precedes it. Thus the durations of the influencer (the Acauan Phase) and of the Mangueiras Phase sites showing influence are reasonably comparable.

TABLE R.—*Duration of the Acauan Phase village site of M–3*

Strata cut	Dimensions of cut	Total sherds from cut	Estimated duration in years
	Meter		
Mound 1, cut 1	1.5×1.5	1,826	71.0
Mound 1, cut 2	1.5×1.5	1,508	58.0
Mound 1, cut 3	1.5×1.5	1,696	65.3
Mound 1, cut 4	1.5×1.5	2,988	115.0
Mound 1, cut 5	1.5×1.5	1,802	69.4
Mound 2, cut 6	1.5×1.5	523	20.1

DIAGNOSTIC FEATURES OF THE ACAUAN PHASE

The definition of the Acauan Phase depends upon one well-preserved habitation site in the center of Mexiana and two other sites now destroyed by erosion, one of which is on the south coast of Mexiana and the other on the north-central part of Marajó. One site is located on a marsh, another on the coast, and the third on a small river, revealing no consistent settlement pattern. The village layout as represented at M–3 is an area 350 by 15 meters. Sherds are abundant to a depth of 24 cm. No cemeteries were found, or any other evidence of the method of disposal of the dead.

The ceramic definition of the Acauan Phase is provided by one plain ware, Piryzal Plain, a sherd-tempered, orange to gray surfaced pottery typically with a gray core, and by several well-defined decorated types. These comprise 38 percent of the total sherds and include a well-executed type of corrugation (Floripes Corrugated), excision in standardized motifs (Acauan Excised), incision (Carobal Incised), and scraping (Paciencia Scraped). Except for a slight decline in the popularity of Floripes Corrugated, none of these types show any consistent trend that can be used to distinguish temporal differences within the Phase. Ceramic artifacts include figurines (M–3 and J–12), a circular stamp with a handle (M–3), and a round, solid, perforated object that may be a spindle whorl (M–3). One stone artifact was found: a flake of quartzite (M–3).

The duration of this Phase on the islands at the mouth of the Amazon appears to have been short. Present evidence indicates that it entered suddenly and left with equal abruptness. There is no indication that the Acauan Phase was in the area at the time of the arrival of the Europeans in A. D. 1500.

THE ARUÃ PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

Habitation Sites on Mexiana and Caviana

The major concentration of the Aruã Phase is on the Islands of Mexiana and Caviana. In addition to the habitation sites described here, two were excavated on the north coast of Marajó (pp. 242–245) and one in the southern part of the Territory of Amapá (pp. 37–38).

Mexiana

M–2—PAPA CACHORRO

A rubber cutter noticed sherds washed out of the banks of a small branch of the Igarapé Papa Cachorro, 2.5–3.0 km. from the south coast of Mexiana and east of Fazenda Nazaré (fig. 150). Examination of the area revealed an Aruã habitation site on the right (west) bank of the *igarapé*, which had been partially cut through by this small branch (fig. 164). Sloughing of the bank along the branch had caused the sherds to fall into the water from their original location below the humus layer at a depth of from 18–22 cm. in the ground. The undisturbed area of the site revealed sherds in the loose, light gray clay below which the clay continued light gray but became more compact. Owing to heavy forest growth, the exact limits of the site could not be defined, but sherds seemed to be primarily concentrated in an area 6 meters wide and 15 meters along the bank. Some of the sherds from the water's edge have a patina, but those from the main part of the site are in fair condition. They include 976 sherds of Piratuba Plain, 10 Nazaré Brushed, 25 Aberta Incised (pl. 102, *a–f*), 13 Unclassified, and 13 miscellaneous clay fragments. Seven sherds of Marajoara Phase deviation were mixed in with the Aruã Phase ware, 5 belonging to the Ararí Excised class, (pl. 112, *q–k*), and 2 rim adornos (fig. 165).

M–7—ABERTA

About 2 km. east of the mouth of the Igarapé Papa Cachorro is the small Igarapé Aberta. Up stream, about 1.5 km. from the coast, the *igarapé* has a cut across an old Aruã occupation site (fig. 150) leaving the potsherds in the muddy steam bed. They were recoverable only at low tide when the *igarapé* drains completely. Tests along the top of the banks, 2.5 meters above the bed, indicated a few sherds 25 cm. below the surface on the left bank. On the basis of the area of greatest concentration of pottery in the mud, it appears as though the site originally extended for about 8 meters along the bank. The submersion of the specimens under water has given them all a patina unnatural to Piratuba Plain. The sherds collected classify into these

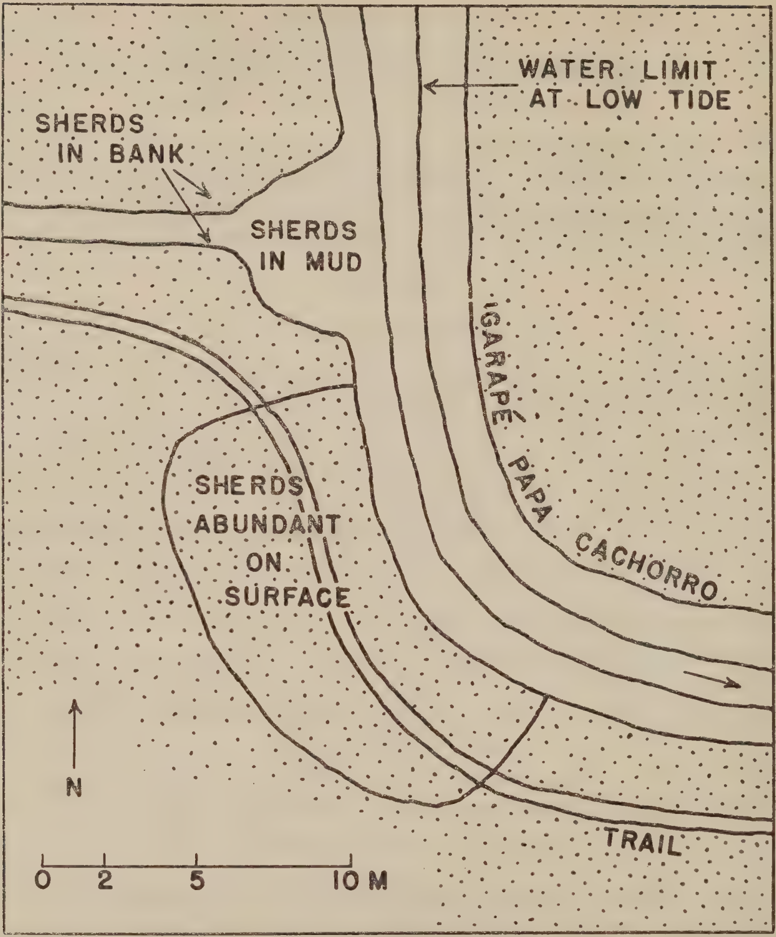
WATER LIMIT AT LOW TIDE
SHERDS IN BANK
SHERDS IN MUD
IGARAPÉ PAPA CACHORRO
SHERDS ABUNDANT ON SURFACE
N
TRAIL
0 2 5 10 M

Figure 164.—Plan of M–2—Papa Cachorro, a habitation site of the Aruã Phase.

pottery types: 131 Piratuba Plain, 8 Nazaré Brushed, 3 Aberta Incised, 1 modeled bird (?) on the side of a pottery drum fragment (pl. 111, *b*; cf. pl. 111, *c*), 9 Unclassified (pl. 112, *d–f*), and 13 miscellaneous clay fragments.

Caviana

C–5—MORERA

One kilometer from the east bank of the Rio Pacajá, about 7 km. above its mouth, is an Aruã village site (figs. 151, 166). It occupies a slight natural rise in the forest, which protects it from inundation during the rainy season. The forest stretches for a considerable distance to the north, south, and east but is broken on the west by

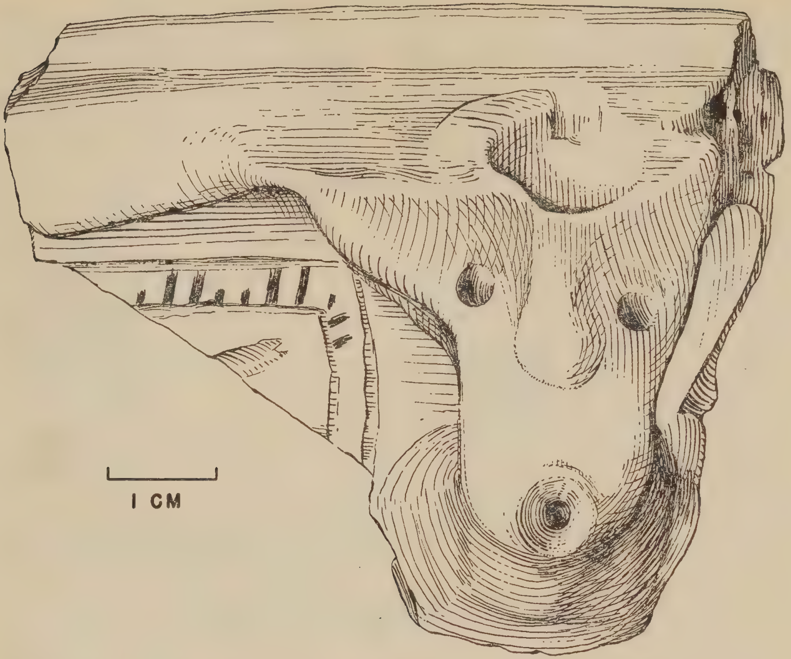

FIGURE 165.—Ararí Excised vessel with adorno, a Marajoara Phase trade sherd found at the Aruã Phase site of M–2—Papa Cachorro.

a broad arm of *campo* 300 meters from the site. The soil is light-gray clay, which was dry and packed hard at the end of the dry season, and vegetation was like that in the surrounding forest. Sherds were present on and below the surface over a roughly circular area 10–12 meters in diameter and from 5–12 cm. in depth. Exploration in the vicinity revealed a few scattered sherds 30 meters southwest of the main site, but extended excavation produced no more in this area.

The entire site was excavated, producing 606 sherds from bowls and jars of Piratuba Plain, none of which have any type of decoration.

C–6—CROATASAL

This village site is approximately 1.5 km. west of C–5, near the edge of a stretch of forest on the opposite side of the patch of *campo* (fig. 166). An arm of the Igarapé Pacajá runs 250 meters from the western edge of the site, which occupies a natural rise about 1 meter above the level of the *campo*. Occupation refuse covers an area 75 meters long in a north-south direction by 15 meters wide, with the larger concentration toward the north end. Sherds were present to a depth of 15 cm. A group of jar bases occupying a small area just north of the center of the site represents a burial spot designated as

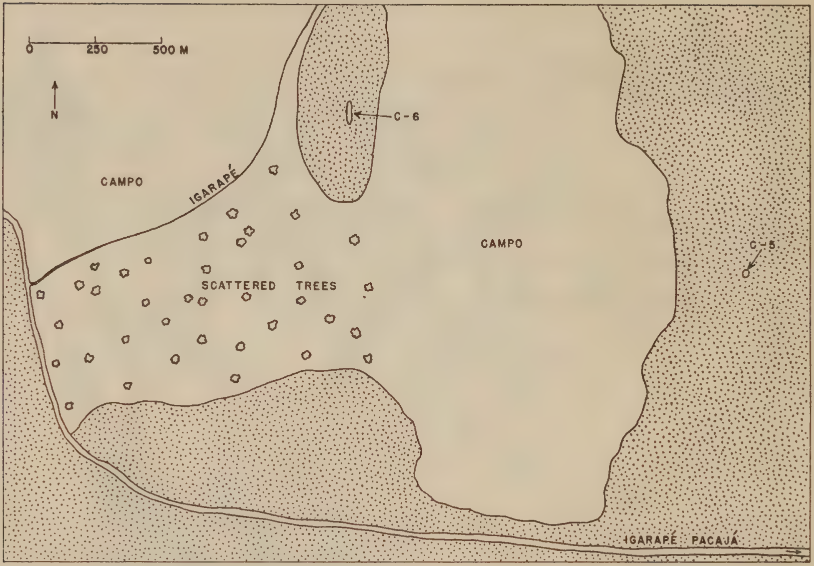

FIGURE 166.—Location and environmental situation of C–5—Morera and C–6—Croatasal, habitation sites of the Aruã Phase.

section A (pp. 499 ff., for description). The soil was light-gray clay, and not distinguishable from the sterile soil of the adjacent forest. The growth on the site included small trees, spiny palm, and broad-leafed *croatá*.

Surface sherds were gathered from all parts of the site and two 2 by 2 meter square tests were made, one near the north end and the other near the south end. The collection includes 778 plain sherds and 31 fragments of applique or sherds with applique, all representative examples of Piratuba Plain. Most unusual of these is a chubby, four-toed foot (fig. 167, *b*) that may represent the foot of a cayman or land turtle.

C–7—SÃO DOMINGO

About 250 meters inland from the west bank of the Igarapé Pacajá, almost opposite C–5, is a small Aruã habitation site (fig. 151) now almost completely covered by a large anthill. It is on a large natural elevation that protects it from inundation during the rainy season, and covers an oval area 20 by 7 meters, with sherds to a depth of 20 to 35 cm. The forest in the vicinity is thick, and contains abundant spiny palm and cane.

Excavation was possible only at the edges of the site, because of the large superstructure erected over the main portion by the ants, which were still in residence. A sample of 607 Piratuba Plain sherds

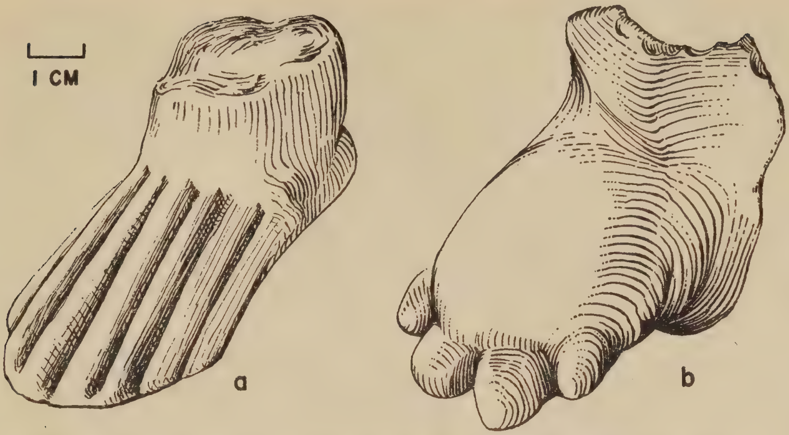

FIGURE 167.—Aruã Phase pottery animal feet. *a*, C–6—Croatasal, section A; *b*, C–6—Croatasal.

was collected, of which 14 had applique decoration. Objects of nonceramic material include:

Red ochre.—A small, irregular lump showing no evidence of use.

Polishing stone.—A small piece of diorite with two small facets produced by rubbing.

Glass bead.—The post-European position of this site was established by the finding of a tiny, blue, glass "seed" bead comparable to those still used today by the Indians. It has a diameter of 2 mm., a thickness of 1 mm., and is perforated by a hole too small to allow the passage of a fine needle. Although we encountered no other trade objects, the *caboclos* asserted that this site had been a popular hunting ground a few decades ago, and that a great many beads as well as some silver spoons had been removed.

C–8—PACAJÁ

This habitation site is directly east of C–7, on the bank of the Igarapé Pacajá (fig. 168), and covers an oval area 20 meters long by 8 meters wide. The soil was light-gray loam, filled with roots for the first 10 cm., followed by sherds between 10 and 20 cm. below the surface. Below 20 cm., it became light tan and sterile. At the time of our visit, the area was an abandoned clearing beginning to revert to forest, having been used recently by a *caboclo* as a dwelling site.

The whole area was tested to determine the limits of the Indian site, and larger test pits were dug in three places toward the north, south, and east edges, producing 646 sherds of Piratuba Plain, one of which is decorated with applique.

C–10—SÃO BENTO

On the west bank of the Igarapé Apaní, 100 meters southeast of the *fazenda* house of São Bento and about 4 km. downstream from C–9, is a relatively large Aruã habitation site (fig. 151). It extends

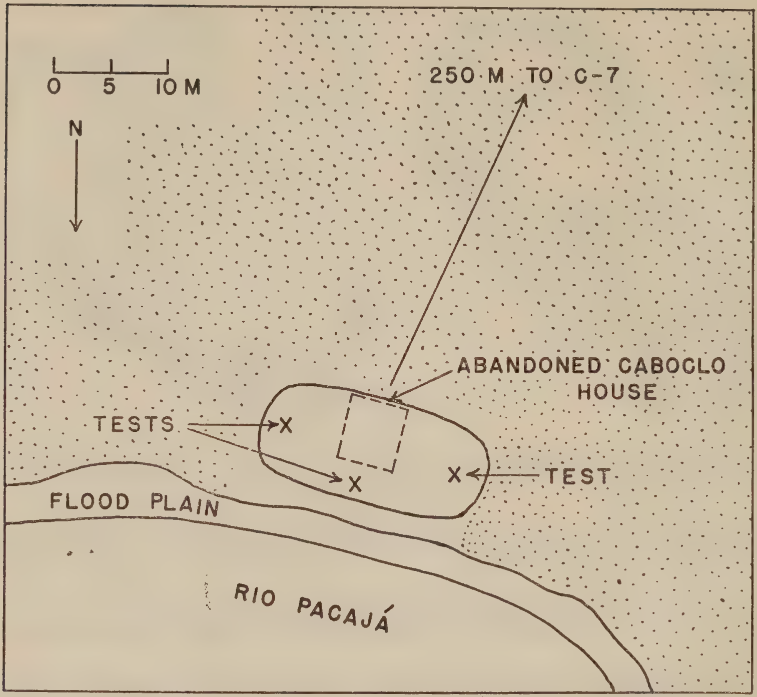

Figure 168.—Plan of C–8—Pacajá, a habitation site of the Aruã Phase.

75 meters along the *igarapé* on the edge of natural rise of about 1 meter, which marks the limit of the flood plain. The sherds are hidden by humus and a covering of small trees, and discovery of the site was said to have been made some years before when pineapple bushes were planted. The soil was light tan clay and very hard at the end of the dry season. At this time of the year, the Igarapé Apaní is completely drained at low tide, although at high tide it contains about 2.50 meters of water.

According to the residents, no jars or portions thereof had ever been found at C–10, and testing confirmed this. Sherds were sparsely distributed over the site at a depth of 5 cm. A surface collection was made in places where the pottery had been uncovered by cattle and by a path along the river side. This was enlarged by cutting a section 6 meters long by 50 cm. wide in from the path. Occasional streaks of burned clay were noted at the same level that produced the sherds. The collection includes 315 sherds of Piratuba Plain, 1 small sandstone chip (2.5 by 2.5 cm.), and 1 stone ax.

Stone ax (*fig. 169, a*).—This specimen was acquired from the son of the owner of the site, who claimed to have found it during the pineapple planting. Since it is a typical Aruã ax, this seems likely to be true. The stone is fine-grained, pale, gray-green diorite. Outline is trianguloid, narrowing from 7 cm. at the convex blade to a rounded butt. Length is 10 cm., thickness 2.5 cm. The surfaces are not well smoothed, so that some pecking marks and concoidal cleavage fractures have not been erased. The best finishing is on the blade. The butt end was considerably battered from use as a hammer.

C–13—ALTA PIRATUBA

The Rio Piratuba is a large tributary of the east bank of the Rio Goiabal. Site C–13 is about 3 km. from the south shore of the south fork (fig. 151). The entire region is covered with forest with

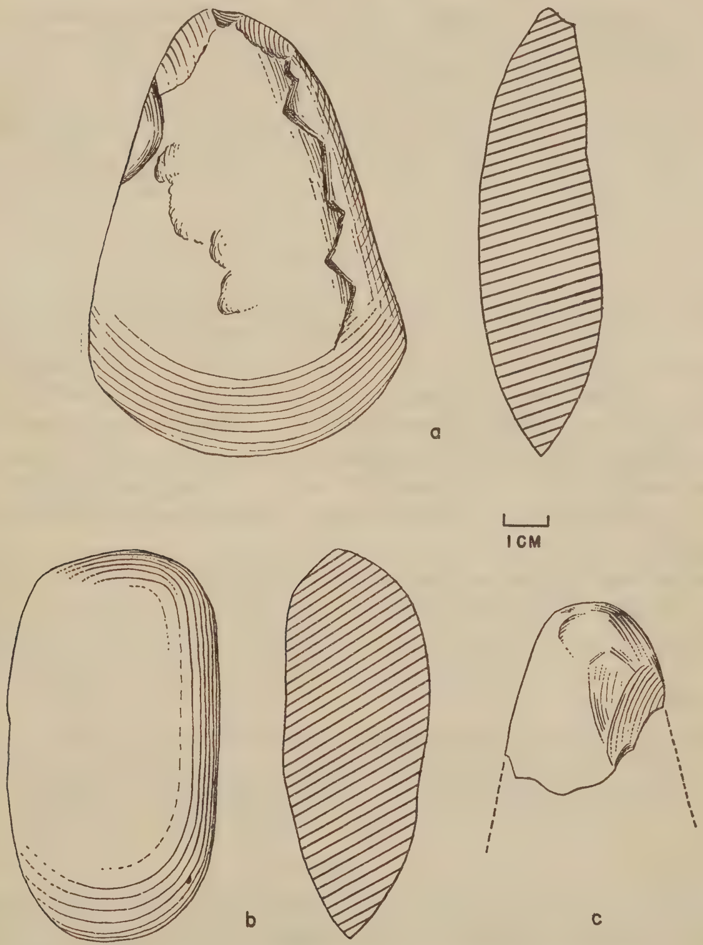

FIGURE 169.—Aruã Phase stone axes. *a*, C–10—São Bento. *b*, C–13—Alta Piratuba. *c*, C–14—Limãozinho.

considerably thicker undergrowth than in the Igarapé Pocoató region. The site occupies an area 30 meters north-south by 10 meters east-west. The south half was a knoll about 25 cm. higher than the north end, but sherds were most abundant on the lower part. Soil was light gray and powdery in texture to a depth of 10 cm., where it turned to compact, hard, gray clay.

About 30 sherds were picked up on the surface and after sampling to determine the extent of the site, excavation was concentrated in an area about 3 meters square near the center of the north half. The majority of the sherds were 5 cm. or less below the surface, although some were embedded in the clay hardpan. The collection is divided into 724 sherds of Piratuba Plain, including 6 with punctate and 3 with applique ribs, and 8 irregular lumps of fired clay, 2 to 6 cm. long. One stone ax was found on the surface.

Stone ax (*fig. 169, b*).—This ax departs from the typical Aruã variety in being of coarse, brownish granite with flecks of dark gray and black instead of diorite. It is 10 cm. long, 4.8 cm. wide, and 2.7 cm. thick with parallel sides and rounded ends. One surface is flattened, the other convex. The blade is convex slightly off-center, but fairly well sharpened.

C–14—LIMÃOZINHO

On a high spot on the south bank of the Igarapé Limãozinho, about 500 meters from its junction with the north branch of the Rio Piratuba, is a small Aruã habitation site (fig. 151, pl. 98, *a*). The bank is an almost vertical rise of 2.5 meters at low tide, while at high tide the water comes to within 25 cm. of the top. Sherds are limited to an area 15 meters long by 8 to 10 meters wide on the water's edge, with a few washed down the sides of the bank. The soil is dark-gray clay for the first 10 cm., beneath which it becomes harder and more compact.

Sherds were present on the surface of the ground and to a depth of 8 to 10 cm. The sample was collected from the surface and from tests in all parts of the site. It includes 525 sherds of Piratuba Plain, 39 irregularly shaped, fired-clay lumps, and 1 fragment of a stone ax.

Stone ax (*fig. 169, c*).—This fragment represents the butt end of an ax of fine-grained, dark brownish diorite. The surfaces are well smoothed and polished and the end has been chipped by use. Existing length is 4 cm., diameter 3.8 by 2.9 cm. at the break, from which it tapers to the flattened end, measuring 1.6 by 0.7 cm.

C–15—PATAHUA

About 1 km. southwest of C–14, on the former bank of the Igarapé Patahua is the remnant of a habitation site (fig. 151). Since its abandonment, the *igarapé* has cut an arm into the bank, and sherds were limited to the muddy bed over an area 5 meters in diameter, 5 meters from the edge of the main stream at low tide (pl. 98, *b*). The sherds are covered with patina from long immersion and the edges are rounded. The sample contains 126 sherds, all Piratuba Plain.

Cemetery Sites

Cemetery sites belonging to the Aruã Phase have been found on Mexiana and Caviana. Two on Mexiana and six on Caviana were visited and excavated, and provide a detailed description of the Aruã Phase burial pattern.

Mexiana

M–4—FUNDO DAS PANELLAS

The boundary between the central *campo* and the coastal forest of Mexiana is irregular, with slender fingers of *campo* stretching into the forest here and there. One of these along the south coast, near the headwaters of the Igarapé Campinho (fig. 150), contains a small clump of trees now densely intertwined with vines and underbrush that was once an Aruã burial place. The elevation of the ground at this spot is 20 cm. above that of the surrounding *campo*, which prevents its flooding during the rainy season. When the grass is dry, the present *caboclos* set fires that sweep along with the wind and may have reduced the size of the clump of trees slightly. This is suggested by the fact that a few of the jars were found outside the present tree area, which measures roughly 15 meters in diameter (pl. 99, *a*). The distance from water and absence of features sought in habitation sites suggest that the Aruã selected for cemetery use an area that would not need to be frequented by the living in the pursuit of their daily tasks.

The 46 vessels appeared to have an approximately circular arrangement as they lay fallen and broken on the ground. Plotting by a grid (fig. 170), however, suggests that they were originally oriented in lines running north-south and east-west, with the majority concentrated in the eastern part of the area of distribution. Most of the jars were half buried in the dirt and debris, and some were completely surrounded by and enveloped in roots and vines (pls. 99, *b*; 100, *a*). Although none were completely undamaged, a few were nearly intact and almost all were sufficiently preserved to make the shape restorable. In having suffered so little destruction, M–4 is unique among the Aruã cemeteries thus far investigated.

Although many of the jars were in good condition, few appear to have been provided with lids, and the contents were consequently exposed to the elements. Occasionally, when the vessel had fallen over and the bones were protected from direct weathering, a few large fragments survived. In most of the vessels, white flecks in the

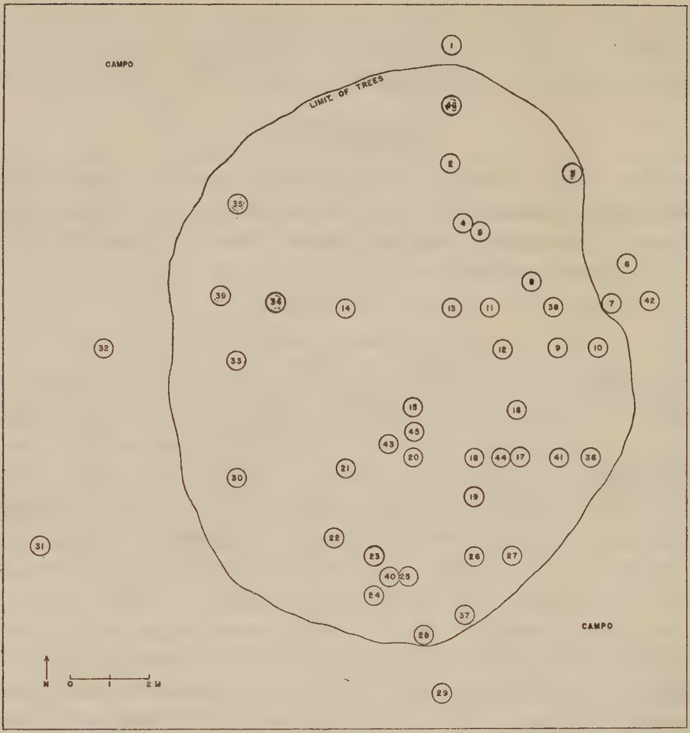

Figure 170.—Plan of M–4—Fundo das Panellas, an Aruã Phase cemetery site, showing the positions of the burial jars.

fine, black, powdery soil in the bottom were the only remaining skeletal evidence.

All of the vessels from M–4 are Piratuba Plain. The excavation, contents, and vessel descriptions present the following details:

Jar 1 (fig. 171, *a*), badly broken but reconstructible, had fallen on its side and was leaning to the west. It was half full of black dirt, roots, and small fragments of bone. The surface is badly eroded, with large particles (4–6 mm.) of ground sherd temper sticking out. The neck shows smoothing striations on the exterior but the wide coils are not fully erased on the interior. The rim is thickened externally, everted and tapered to a rounded lip, with a slightly flattened upper surface 1.8 cm. wide (Piratuba Plain shape 16). The rim is 3.5 cm. wide and 2.0 cm. thick with a mouth diameter of 52 cm. The vessel body is elongated and rounded with a prominent shoulder and insloping constricted neck. The body height is 50 cm., neck and rim height 25 cm. with the maximum body diameter 65 cm., base of neck diameter 50 cm., the base diameter 14 cm., raised 1 cm. on a pedestal (base type C—fig. 181). On the neck 6 cm. below the junc-

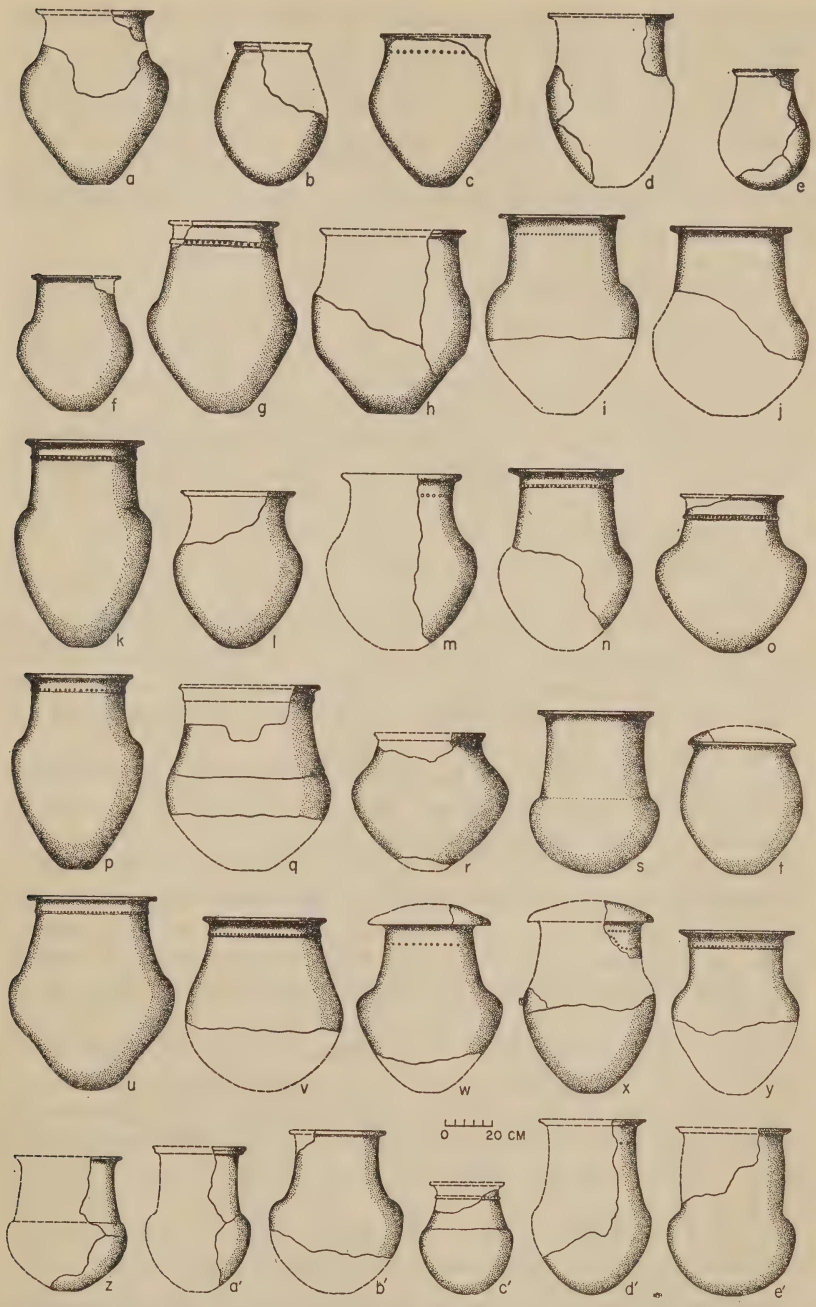
a
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FIGURE 171.—Reconstructed burial jars from the Aruã Phase site M-4—Fundo das Panellas.

tion of rim and neck is a row of circle impressions, each one measuring 1.3 cm. in diameter and 3 mm. deep.

Jar 2 consists of only the base and neck; no rim sherds could be associated with this form. It was half buried leaning toward the northeast, with the contents scattered owing to its broken condition. It has a round base, elongated ovoid body, measuring 43 cm. high and 50 cm. in diameter, incurving sharply to form a constricted neck whose existing fragment measures 34 cm. in diameter.

Jar 3 was completely smashed and not reconstructible.

Jar 4 (fig. 171, *b*) probably at one time stood adjacent to jar 5, for its base is only 20 cm. from this vessel. It was badly broken, with the lower half buried in the ground, but contained skeletal material in better than usual state of preservation. The arrangement of the bones, with the skull on the south side, leg bones at the north and the ribs and other bones in a pile between, indicates secondary burial of a disarticulated young adult skeleton. The exterior vessel surface is smoothed, but covered with deep crackle lines; the interior surface reveals coil junctions in places, indicating coils 6 to 7 cm. thick. The jar is globular with a maximum diameter of 48 cm. at a height of 32 cm. The sidewalls then inslope to a constricted mouth with an everted rim 34 cm. in diameter. The rim is slightly thickened on the exterior and measures 3.2 cm. wide and 1.6 cm. thick (Piratuba Plain shape 19). The vessel is asymmetrical especially around the base, which is rounded; one side of base has a slight depression where the coiling slipped, giving the effect of a pedestal.

Jar 5 (fig. 171, *c*) is one of the few burial jars which suffered little damage even though the rim and part of neck had broken off. It remained vertical, half-buried in the ground, filled one-third with pitch-black, wet humus mixed in the upper part with decayed leaves and twigs and in the lower part with fragments of long bones in a very poor state of preservation, identifiable only as human, probably femur, radius, and ulna. Two small broken bowls, vessels A and B, were with the bones, as well as miscellaneous sherds. Loose sherds around the outside of the jar base wedged it into a vertical position. The large, elongated, rounded jar measures 57 cm. in diameter at the waist, 32 cm. high to this point, and 37 cm. high from here to the rim. The neck incurves to the rim where the lip is everted as a result of adding a coil to a direct rim after some drying had already taken place. The everted rim measures 3.2 cm. wide with a rim diameter of 48 cm. (Piratuba Plain shape 18). A row of rings is impressed on the neck 8 cm. below the rim. The rings measure 1.4 to 1.5 cm. in diameter, spaced 2 to 3 cm. apart and are 2 to 4 mm. deep.

Vessel A.—The small bowl was partially restorable, measuring 8.5 cm. high, 15.0 cm. in mouth diameter, and 3.5 cm. in base diameter. The exterior surface color of light tan, the interior a dark, drab gray, and a dark gray core speckled with ground sherd temper particles are typical of Piratuba Plain. The interior is scraped leaving a few smoothing tracks while the exterior is better smoothed, but still rough and uneven with protruding temper particles. The rim is folded over, slightly everted with a rounded lip. Rim thickness is 8 mm. compared to the body wall thickness of 5–6 mm. and base thickness of 10 mm. Vessel A represents a miniature variety of vessel shape 3 of Piratuba Plain.

Vessel B.—The fragments were sufficiently restorable to give the general shape and measurement. The small bowl with a thickened, flat pedestal base measures 16 cm. in rim diameter, 12 cm. high, 6 cm. in base diameter, with a pedestal 8 mm. high, body wall thickness 5–6 mm., and base thickness 1.4 cm. The surfaces are badly fire clouded. Both surfaces are rough and irregular with some crackle lines. The rim is unthickened and slightly outsloping with a rounded lip. Sherd temper particles are fine to 2 mm. in diameter. The bowl represents a miniature variety of shape 7 of Piratuba Plain.

Jar 6 (fig. 171, *d*) had been turned over and lay upside down with the dirt filled with miscellaneous sherds, a few bone fragments and a portion of the lower mandible. The exterior surface of the body of the jar is crackled with the neck showing some floating, while the interior is smoothed with the 3-cm. wide coils still distinct. The everted rim is exteriorly thickened with a thick coil forming a flat angular top rounded on the tip, measuring 3.5 cm. wide, 5 mm. thick at the lip, with the cross section through the thickest part 3.5 cm. (Piratuba Plain shape 15). The form is a rounded body with a prominent shoulder and almost vertical neck walls. The vessel has a body diameter of 54 cm., body height 30 cm., neck diameter 48 cm., total vessel height 75 cm. with a rim diameter of 54 cm.

The 110 sherds found inside include 2 bases, 6 rim sherds from large platters measuring 26 to 38 cm. in diameter and representative of shapes 1 and 5 of Piratuba Plain (which were sometimes used as lids upon burial jars), 20 sherds from small to miniature vessels ranging from bowls to small jars, with the rest of the fragments representing miscellaneous body sherds. In spite of the quantity of sherd material, there were insufficient pieces to reconstruct any of these vessels.

Jar 7 (fig. 171, *e*) leaned toward the south and was badly broken. The black dirt inside contained a few large fragments of adult long bones, a skull fragment and a molar, and two small vessels, A and B, one of which also contained a few bone fragments. The round-bodied and round-based jar has a folded-over rim, 2.8 cm. wide and 1.1 cm. thick, rim diameter 21 cm., constricted neck diameter 19 cm., body diameter 38 cm., and total vessel height 51 cm. (Piratuba Plain shape 17).

Vessel A (*pl. 105, a*) is a small jar with a folded-over rim and rounded lip, a globular body and a thickened flat base. Vessel slightly asymmetrical with diameter of body 14.5 cm., height 10.5 to 11.0 cm., base diameter 6.5 cm., exterior mouth diameter 13–14 cm., body wall thickness 4–6 mm., rim thickness

6 mm. and base thickness 1.2 cm. Both surfaces uneven; color range from whitish to gray to dusty brown with fire clouds.

Vessel B (*pl. 105*, *c*) is an extremely crude, asymmetrical, unsmoothed bowl with the rim edge unsmoothed and with the body walls highly irregular in thickness, ranging from 18 mm. near the base to 5 mm. on the upper walls. Rim slightly everted with rounded lip. Mouth diameter 11 cm., rounded base 7 cm. in diameter, height 8 cm. This bowl probably represents a crude, miniature variety of shape 8 of Piratuba Plain.

Jar 8 (fig. 171, *f*), one of the smallest jars from the site, was found half buried in the ground under a mass of tree roots. Inside were the bones of a mature adult with the skull fragments arranged on the bottom in the northeast side of the jar, a small crude offertory bowl, vessel A, in the northwest side and the long bones laid parallel in the south half of the vessel. The burial jar is smoothed on the exterior but still very uneven, with smoothing striations still visible on the neck and rim. Ground sherd temper grains are very distinct on the eroded surfaces. The interior of the neck is uneven with a few coil lines still visible and with many crackle lines. The round-bodied jar with a flattened base is 50 cm. in maximum body diameter, 39 cm. in rim diameter, with a pronounced shoulder where the slightly incurved neck walls join the body. The neck length is 20 cm., total vessel height 58 cm. The everted rim with a flat top measures 2.6 cm. wide, 1.9 cm. thick at the center, and 1.3 cm. thick at the rounded lip which has an irregular groove around it (Piratuba Plain shape 15).

Vessel A is fragmentary, with one-half missing and belongs to shape 7 of Piratuba Plain. The bowl is extremely crude and asymmetrical, the surfaces unsmoothed, undulating and rough, with many ground sherd temper particles protruding. Tannish-gray surfaces are spotted with fire clouds. Incurving sidewalls give a maximum body diameter of 12 cm. with the mouth diameter 10.5 cm., height 8.2 cm. and slightly concave base 7.0–7.5 cm. in diameter.

Jar 9 (fig. 171, *g*), lying on its side in the northeast part of the cemetery with its mouth toward the north, was intact except for a small fragment out of the rim, and empty except for an active wasp nest and a little light-gray dust. The exterior surface is uneven with the temper grains of ground sherd showing clearly and 4-cm. wide coils still visible on the neck. The tall jar has a slightly rounded, thickened bottom 27 cm. in diameter, an elongated, round body 63 cm. in diameter, a neck height of 41 cm. with a distinct line where its insloping walls join the body, a rim diameter of 48 cm., and an everted, slightly thickened rim 3.2 cm wide, 2.3 cm. thick, with a body wall thickness of 1.2 cm. (Piratuba Plain shape 16). A decorated rib 2 cm. wide and 1 cm. high runs around the neck 7 to 10 cm. below the rim, with impressed circles 1.0 to 1.5 cm. in diameter, spaced 1.0 to 1.5 cm. apart, and 4 mm. deep on its top.

Jar 10 (fig. 171, *h*) stood vertical with its base 30 cm. below the ground, but with the upper portions of the vessel badly broken. The jar was filled with 25 cm. of dry, light-gray dirt and many small fragments of decomposed bone. The neck exterior is well floated, but the body surface crackled and eroded. Both the interior and exterior surfaces of the vessel are rough and uneven with the sherd temper particles standing out prominently. The rim is everted, slightly thickened but not folded over, measuring 1.8 cm. thick and 4.0 cm. wide and with a rounded lip (Piratuba Plain shape 16). The body is elongated and rounded, 68 cm. in diameter, tapering to a slightly flattened base 25 cm. in diameter and incurving to a constricted neck 60 cm. in diameter with a rim diameter of 64 cm. The neck height is 34 cm., the overall vessel height 79 cm.

Jar 11 was badly broken by a tree, 10 cm. in diameter, growing out of the center, although light-gray soil with flecks of bone was still in the bottom, which was buried 50 cm. in the ground. The rim was missing and it was impossible to associate any of the miscellaneous rims found in the site with this vessel. The body is ovoid, measuring 68 cm. in diameter, 61 cm. in height to the neck, which inslopes and has a diameter of 48 cm. at this point. Only 15 cm. of the neck fragment exists. The neck and body are floated on the exterior with smoothing striations still visible, while coiling marks still remain on the interior of the rough and uneven neck.

Jar 12 (fig. 171, *i*) had several large trees and roots growing through the base, which had destroyed any evidence of its original contents. Crackle and water-bubble pits are on the uneroded surfaces of the exterior, with the coiling marks still present on the interior. The everted, slightly thickened rim (Piratuba Plain shape 12) is 3 cm. wide and 2 cm. thick, whereas the body wall thickness is only 1.4 cm. The vessel has a long, gracefully curving, constricted neck 46 cm. in diameter and 30 cm. long, with a pronounced shoulder where it joins the round body, which is 66 cm. in diameter. Total height is 84 cm., rim diameter 51 cm. A decorative row of impressed circles, 6 mm. in diameter and 1 cm. apart, extends around the neck, 8.5 cm. below the rim.

Jar 13 (fig. 171, *j*) was found buried 45 cm. in the ground, standing in a vertical position and completely encircled with roots. Some roots had entered the vessel, destroying the contents. A few large sherds had been used as chocks around the slightly flattened bottom to keep the jar upright. The exterior of the neck and body are well floated with crackle lines very prominent on the rim exterior; on many parts of the surface large particles of ground sherd temper protrude. The everted, thickened rim tapers so that it decreases in thickness from 2.3 cm. to 2.0 cm. at the rounded lip forming a rim diameter of 52 cm. (Piratuba Plain shape 16). The vessel has a rounded body

68 cm. in diameter, a constricted neck 49 cm. in diameter, and a total height of 78 cm.

Jar 14 was crushed beneath a mass of tree roots so that it was impossible to extricate anything except a few rim sherds. The everted rim, thickened to 2.0 cm. from a body wall thickness of 1.6 cm., tapers to a rounded lip where it is only 1.6 cm. thick. The flat top of the rim is 4 cm. wide forming a prominent angle with the slightly outcurving neck (Piratuba Plain shape 15). A row of circle impressions, 6 mm. in diameter, 4 to 6 mm. apart, 2 mm. deep, extend around the neck at a point 5 cm. below the rim, where the body wall is slightly thickened by a low ridge. These circle impressions were made with a hollow cane when the clay was so wet that some of the clay from the center stuck in the cane leaving the center of the circle 1 to 2 mm. lower than the vessel surface. Both surfaces are crackled and uneven, with smoothing marks from the fingers still prominent.

Jar 15 lay completely buried beneath the root mass of a large tree and could not be extricated.

Jar 16 was also covered by the root mass of large trees; however, it was measured and observed to be comparable in size, shape, and form to Jar 12 (fig. 171, *i*).

Jar 17 (fig. 171, *k*) had toppled to the southeast, breaking, spilling its contents, and then the neck fragment had been encircled by the roots of an adjacent tree. The interior surface is badly eroded with deep crackle lines. The exterior is not only better preserved but better smoothed, although remaining irregular and uneven, with the crackle lines finer and more numerous. The 4-cm. wide, everted rim increases from the body wall thickness of 1.3 cm. to 1.6 cm. and tapers to a rounded lip (Piratuba Plain shape 12). Total vessel height is 91 cm., with the elongated, ovoid body 61 cm. long and 54 cm. in diameter incurving prominently at the shoulder to the constricted neck with gentle insloping walls, which measures 30 cm. high and 46 cm. in diameter; the rim diameter is 52 cm. A decorative rib, 2 cm. wide, and rising 7 mm. above the surface had been affixed 7 cm. below the rim after the rest of the vessel had begun to dry, for this rib sloughs off easily, leaving no sign of its point of attachment. Impressed circles appear on the upper edge of the rib; they measure 1 cm. in diameter and range from 1.0 to 1.5 cm. apart.

Jar 18 (fig. 171, *l*) lay on its side with the rim and neck broken off, but nearby. Both surfaces are irregular, heavily crackled with the bright-orange temper grains of ground sherd giving a speckled appearance to the light-tan to dull-orange surfaces. Smoothing tracks show but the surfaces are still very uneven, almost undulating from failure to erase completely the coil lines. The jar has a rounded body, rounded base, and constricted neck. The folded-over, externally thickened rim has a thin, squared lip with rounded corners (Piratuba Plain shape 17). The vessel is 68 cm. high, with a maximum body diameter of 53 cm., a neck height of 16 cm., a neck diameter of 42 cm., and a rim diameter of 51 cm.

Jar 19 (fig. 171, *m*) had tree roots growing through it that had broken the vessel so that it lay partially upside down in 30 cm. of dirt. The exterior surface where not eroded is uneven and irregular, although smoothed, leaving broad (6–8 mm.), faintly concave marks from finger smoothing. The same wide smoothing tracks are visible on the neck interior. The exteriorly thickened rim curves outward (Piratuba Plain shape 18). The lip is rounded, rim thickness 2.5 cm., width 2.1 cm., rim diameter 52 cm. The body wall thickness is 1.4 cm. The large rounded body is 45 cm. tall, 66 cm., in diameter, while the constricted neck gracefully curving inward from the shoulders is 30 cm. high and 41 cm. in diameter. Nine centimeters below the rim is a row of impressed circles averaging 1.1 cm. in diameter and 0.8 to 1.3 cm. apart. The center of the circle is pulled up by suction of the hollow cane tool raising it 1 mm. above the level of the vessel surface. The exterior line of the circle is very distinct.

Jar 20 (fig. 171, *n*) had been broken with the neck fallen toward the west and the body smashed between the roots of a tree. The surfaces are extremely uneven and irregular with abundant temper particles visible, around which crackle lines have developed. The 5-cm. wide, everted rim expands from a body wall thickness of 1.5 cm. to 2.0 cm. at the lip which is squared with rounded corners (Piratuba Plain shape 12). The reconstructed vessel measures 45 cm. in height and 56 cm. in diameter on the rounded body, with the constricted neck 33 cm. in height, 36 cm. in diameter, and forming a prominent shoulder where it joins the body. The mouth diameter is only 39 cm., but the rim diameter reaches 50 cm. A low, decorated rib 7 cm. below the rim edge rises 2 to 3 mm. above the vessel surface. It is impressed with circles 5 mm. in diameter, spaced 1.5 cm. apart. Faint traces of red paint are visible on the neck below the rib of impressed circles, and suggest a curvilinear design (fig. 172, *a*).

Jar 21 (fig. 171, *o*) stood upright beneath a mass of roots. The surfaces are poorly smoothed and temper grains of ground sherd show profusely. The everted rim is exteriorly thickened, measuring 1.8 cm. thick as compared to the body wall thickness of 7 mm., and is 3.2 cm. wide with a rounded lip (Piratuba Plain shape 16). The ovoid body with a rounded base is 50 cm. high, 63 cm. in body diameter, with a constricted neck, 22 cm. high and 38 cm. in diameter, forming a distinct shoulder where it joins the body wall. The rim diameter is 44 cm. A narrow, pronounced rib, 1 cm. wide and 1 cm. high, runs

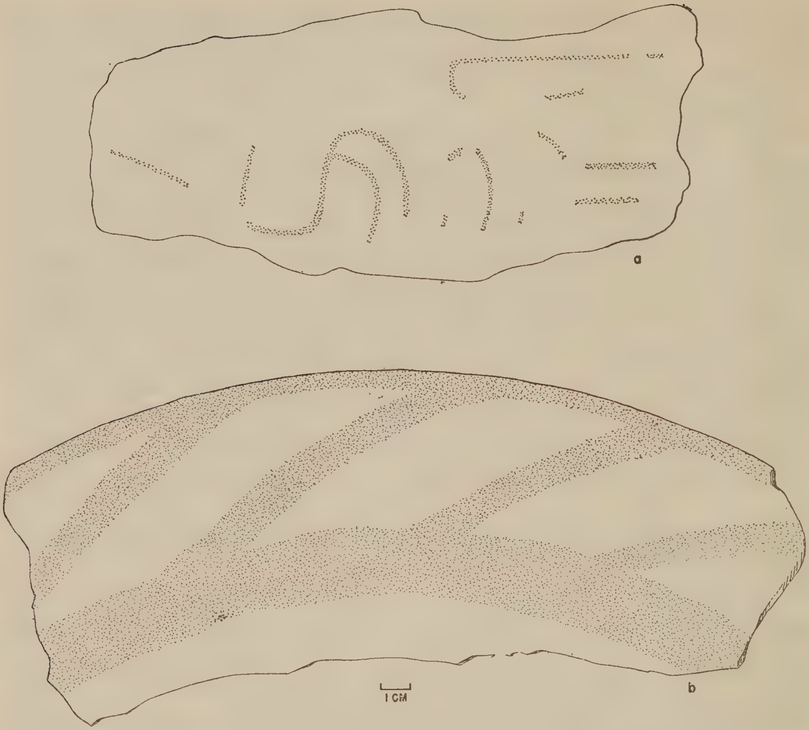


FIGURE 172.—Painted decoration on Piratuba Plain sherds from Aruã Phase sites. *a*, Jar 20, M-4—Fundo das Panellas. *b*, C-6—Croatasal.

around the neck 10 cm. below the rim, and bears a row of impressed rings 7 mm. in diameter, 2 mm. deep and 5 to 7 mm. apart.

Jar 22 (fig. 171, *p*) was lying on its side with the mouth to the west, half buried in the ground, partially broken and with dry, light soil and many roots inside. The everted, thickened rim, 2.1 cm. thick and 2.5 cm. wide, has a rounded lip (Piratuba Plain shape 16). The body is ovoid, 57 cm. long and 54 cm. in diameter, with a prominent shoulder where it joins the constricted neck, 42 cm. in diameter and 28 cm. high, ending in a rim diameter of 47 cm. A decorated band 7 cm. below the rim consists of a raised, pointed ridge with impressed circles, 6 mm. in diameter and 1.2 to 2.5 cm. apart, on one side and vertical cuts, 5 to 7 mm. wide and 2 to 3 cm. apart, on the other side of the neck.

Jar 23 (fig. 171, *q*) stood upright with the lower half buried in the ground. The round body measures 72 cm. in diameter and 42 cm. high, with the total height of the jar 80 cm. The constricted neck is 56 cm. in diameter with the rim diameter 60 cm. The everted rim, 3 cm. wide, expands from the body wall thickness of 1.5 to 2.0 cm. at the rounded lip (Piratuba Plain shape 12). A decorative band of small impressed rings, 6 mm. in diameter, encircled the neck 6.5 cm. below the rim. One of the coil junctions near the waist was not thoroughly erased, leaving a grooved depression.

Jar 24 (fig. 171, *r*) had a dead, burned tree growing through it; the bottom was completely smashed by roots and the fragments were half buried. The surfaces are covered with crackle lines and sherd temper particles protrude. Smoothing tracks appear on the exterior of the neck with the surfaces of the vessel irregular and uneven. Coiling lines, 2.0 to 2.5 cm. apart, are still evident on the neck interior. The ovoid body is 68 cm. in diameter, 28 cm. high to the waist, with an overall height of 54 cm. The short, constricted neck is 40 cm. in diameter with the rim diameter 48 cm. The everted, exteriorly thickened rim is 4 cm. wide, measuring from 1.4 to 1.7 cm. thick with a rounded lip (Piratuba Plain shape 17). Decoration consists of three irregular rows of impressed solid circles, one on the rim exterior, and two immediately below. The circles are 8 mm. in diameter and spaced 0.8 to 1.6 cm. apart.

Jar 25 (fig. 171, *s*) was broken, with the neck nearby and the base standing vertical, the contents disturbed by roots. Both surfaces are floated and smoothed, with fine crackle lines, and the large particles of sherd temper are very prominent. The everted, thickened rim is 5 cm. wide and tapers toward the lip, which is squared with rounded corners (Piratuba Plain shape 15). The globular body is 56 cm. in diameter and 26 cm. high, with a distinct shoulder where it joins the long, curved neck. The 37 cm. high neck is 45 cm. in diameter at this juncture, 43 cm. in diameter at the narrowest point, expanding to a rim diameter of 51 cm.

Jar 26 (fig. 171, *t*) was half buried in the ground but remained vertical even though the neck was broken off and fallen on the west side. The interior was filled with 30 cm. of dirt containing flecks of bone, miscellaneous sherds, and two fragments of a platter, lid A, beneath the bone in the bottom. Abundant particles of sherd temper protrude from the smoothed but uneven surfaces, which are covered with numerous crackle lines. The jar has an everted rim 3 cm. wide, 1.2 cm. thick with a squared lip with rounded corners (Piratuba Plain shape 19). The round body is asymmetrical, measuring 52 by 49 cm., with a rim diameter of 44 by 47 cm., a short constricted neck 38 by 41 cm. in diameter, and an overall height of 57 cm.

Lid A consists of a large fragment of a large, flat, open bowl or platter, which had probably been used in an inverted position as a lid on the burial jar. The exterior surface is extremely uneven and irregular with the interior smoothed. The rim is thickened on the interior with a flattened bevel 2 cm. wide, 1.2 cm. thick as compared with the body wall thickness of 9 mm.; mouth diameter 46 cm. (Piratuba Plain shape 5).

Jar 27 (fig. 171, *u*) was on the surface, lying on its side toward the south, with the base broken and the contents missing. The neck and rim are well smoothed and floated with fine crackle lines, but the body is rough and irregular with deep, crackle lines and with very large temper grains protruding from the surface. The 2-cm. thick rim is everted, forming a sharp angle with the body wall and has a pronounced, horizontal, flat top, which measures 5 cm. wide, with a rounded lip (Piratuba Plain shape 15). The ovoid body is 48 cm. high and 74 cm. in diameter, with a pronounced shoulder where it joins the gracefully incurving, constricted neck, 35 cm. high with a diameter of 47 cm. and a rim diameter of 59 cm. A ridge 3 mm. above the surface runs around the neck 7.5 cm. below the rim, and bears a row of small, impressed rings 5 mm. in diameter and 5 to 7 mm. apart.

Jar 28 (fig. 171, *v*) was broken at the waist, standing upright in the ground but with the contents destroyed. The exterior surface is badly weathered with large crackle lines, protruding particles of sherd temper and other irregularities. The entire vessel is asymmetrical, with the round based, globular body measuring 65 to 70 cm. in diameter, neck diameter 43 by 50 cm., mouth diameter 41 by 48 cm., and rim diameter 52 by 58 cm. The everted, thickened rim is 1.5 cm. thick, 5 cm. wide with a rounded lip (Piratuba Plain shape 16). The total height is 76 cm. with the sides insloping to a neck which has a raised ridge 3 mm. high and 1 cm. wide, placed 8 cm. below the rim. Tiny circles 5 mm. in diameter are impressed along the ridge, spaced 9 to 11 mm. apart.

Jar 29 was completely broken, with the fragments scattered outside the tree line of the site. The exterior surface is crackled, temper particles are prominent and, although smoothed, it is rough and uneven. The fragments are not reconstructible to obtain body dimensions, but the rim is everted, 3.0 cm. wide, and expands in thickness from 1.4 cm. at the junction with the body wall to 1.6 cm. at the squared lip with rounded corners (Piratuba Plain shape 12). The mouth diameter is 56 cm. A row of impressed rings runs 6.5 cm. below the rim. These are very irregular, made when the clay was extremely wet. They are 6 mm. in diameter, centers 1 to 2 mm. deep with the rings 4 to 5 cm. deep, and irregularly spaced from 1.5 to 2.1 cm. apart. After impression the loose clay around the circles was smoothed over, which, in some cases, obliterates the clear outline.

Jar 30 was broken, with the base set in the ground and the neck and rim lying nearby. The surfaces are uneven, with protruding sherd temper particles and fine crackle lines. Its dimensions are: rim to shoulder height 31 cm., neck diameter 38 cm., body height 46 cm., body diameter 62 cm., rim diameter 44 cm. The everted, exteriorly thickened rim tapers from 2 cm. thick to 1.2 cm.

thick at the squared lip with rounded edges (Piratuba Plain shape 15). A row of impressed circles, 8 mm. in diameter, 2 to 3 mm. deep and 1.6 to 2.8 cm. apart runs around the neck 10 cm. below the rim.

Jar 31 was badly broken with the fragments lying in the *campo* outside the limits of the trees; no rim fragments were identified. The body is ovoid, with an insloping, constricted neck. The fragments were not reconstructible.

Jar 32 was completely smashed, with the sherds so scattered and buried beneath a large tree that its shape was not reconstructible.

Jar 33 (fig. 171, *w*) was broken and three-quarters buried against the base of a tree 50 cm. in diameter. Fragments of a large, shallow bowl, lid A, were found beside the jar, with a small tree growing out of the entire mass. The jar surfaces are uneven, with temper particles protruding. Coarse, deep crackle lines cover both surfaces. The interior of the neck still shows the coiling marks. The exteriorly thickened, everted rim with rounded lip and rim diameter of 40 cm. is typical of shape 15 of Piratuba Plain. The fragments of the jar reconstruct as a round body 50 cm. in diameter and 52 cm. high, with the vertical-walled, constricted neck 36 cm. in diameter.

Lid A consists of large fragments of a flat, open platter, which may have been inverted over the jar as a lid. It measures 54 cm. at mouth diameter with the body wall thickness ranging from 8 to 11 mm., thickening to 1.7 cm. at the rim. The exterior is irregular and uneven, with coils 2.5 cm. wide still showing, whereas the interior is smoothed. The color, paste, and sherd temper classify the lid as Piratuba Plain, but the rim is not one of the typical shapes of the bowls of this pottery type.

Jar 34 (fig. 171, *x*) was badly broken with the fragments half-buried in the ground and all covered with heavy moss; however, the contents still remained partially intact. A fragment of a small bowl (bowl B) was on the west side of the interior, with the fragments of the long bones beneath in a poor state of preservation. Miscellaneous sherds from a lid (A) had fallen in on top of the bowl and bones, protecting the latter from complete destruction. The interior of the jar is better smoothed than the exterior, which is undulating and irregular with occasional traces of coil lines and with fine crackle around protruding temper grains. The rim is extremely thickened, increasing from a body wall thickness of 8 mm. to 1.6 cm. at the thickest portion and tapering to 5 mm. at the lip, which is 2.6 cm. wide and strongly everted (Piratuba Plain shape 16). The elongated, ovoid body is 56 cm. high and 57 cm. in diameter, incurving to form a constricted neck 42 cm. in diameter and 16 cm. high with a rim diameter of 50 cm. Several nubbins are on the shoulder of the jar body; they measure 3.0 cm. in diameter and stand 2.5 cm. high. An incised circle surrounds the nubbin 3.5 cm. from its base. Two rows of rings are impressed just below the rim on the jar neck. The uppermost row encircles the neck

6 cm. below the rim; the lower row is undulating, varying from 1.5 cm. to 6.5 below the first row with the long undulations 10.5 cm. in length. The rings are 9 mm. in diameter, 2 mm. deep and from 7 to 12 mm. apart.

Lid A represents a large platter (Piratuba Plain shape 4), which probably had been inverted as a lid over the burial jar. The exterior is very crude, irregular and poorly smoothed with coils 1.5 to 2.0 cm. wide only partly obliterated, whereas the interior is smoothed with prominent crackle lines. The body walls measure 1.5 cm. thick and expand gradually to 2.2 cm. at the externally thickened rim with a rounded lip and a mouth diameter of 54 cm.

Bowl B was unrestored, but the large fragments permitted reconstruction of shape. The small, open asymmetrical bowl measures 16 cm. in mouth diameter, 7.5 cm. high, with a flattened base 4.5 cm. in diameter. Body wall thickness ranges 4–5 mm. and base thickness is 12 mm. The base is flattened so that the crude vessel leans to one side. The surfaces are rough, with temper particles protruding, and tan to light brown in color except for numerous fire clouds. Bowl B represents a crude miniature variety of shape 7 of Piratuba Plain.

Jar 35 (fig. 171, *y*) lay on its side on the surface in the northwest part of the site with the neck broken off the body. The exterior surface of the neck is well smoothed and floated, with the body rough and crackled. Sherd temper particles protrude from both surfaces but especially on the interior, which is very rough and poorly smoothed. The jar has an everted rim expanding in thickness to a squared lip (Piratuba Plain shape 12). Rim diameter is 50 cm., neck height 28 cm., neck diameter 38 cm., body diameter 55 cm., and total vessel height 75 cm. The body wall is thickened slightly 8 cm. below the rim to form a band upon which is impressed a row of rings, 7 mm. in diameter, 3 mm. deep, and 6 to 10 mm. apart.

Jar 36 remained vertical, half-buried in the ground with the rim broken off and fallen inside, along with other fragments from a lid A, with an applique rib design on the rim. The jar had rich, black dirt in the bottom, but all the bone fragments had disappeared. The elongated, ovoid jar has a body diameter of 51 cm., with a small flat base 18 cm. in diameter, a neck diameter of 43 cm. at point of prominent junction with the shoulder, and an estimated overall height of 80 cm. The externally thickened, everted rim expands from a body wall thickness of 1.0 cm. to 1.8 cm. and has a rounded, slightly tapered lip and mouth diameter of 46 cm. (Piratuba Plain shape 16).

Bowl A consisted of several large fragments reconstructible into a platter bowl. The surface finish is extremely irregular and rough, with sherd particles prominent, crackle and pits. It measures 36 cm. in rim diameter, with the externally thickened rim 2.3 cm. wide, 1.8 cm. thick, tapering to a rounded lip (Piratuba Plain shape 4). The exterior of the rim is adorned with a sinuous applique coil 1 cm. wide and 5 mm. high, with irregular, uneven and rough lumps or nubbins in the curve of each undulation. These nubbins average 6 mm. high and are 1.0 to 2.0 cm. wide (pl. 111, *a*).

Jar 37 (similar to jar 17, fig. 171, *k*) was completely buried in the ground with only a few centimeters of the neck and rim sticking out; the base was broken by roots and the entire vessel badly cracked. The interior was filled with fine gray dirt containing flecks of bone. Excavation revealed that the main jar had been chocked in a vertical position by several large sherds placed around the bottom. Coil lines, 2.0 to 3.5 cm. apart, are distinctly visible on the interior of the neck. Both surfaces are rough with fine crackle lines and particles of sherd temper protuding. The everted, thickened rim, 4 cm. wide, expanding to 1.6 cm. from the body wall thickness of 1.0 cm., has a tapered rounded lip (Piratuba Plain shape 16). The elongated, ovoid body is 30 cm. long, with a flat pedestal base 10 cm. in diameter, a body diameter of 53 cm., and a pronounced shoulder in the form of a step where the body joins the strongly curved neck. The neck is 39 cm. in diameter, 28 cm. high, and the rim diameter is 46 cm.

Jar 38 (fig. 171, *z*) was badly cracked, with the base broken by roots and the rim lying only 15 cm. above ground. White flecks of bone and light gray, fine dirt were inside the vessel. Large sherds had been chocked around the base to make the vessel stand vertical. The exterior of the neck was well smoothed, with sporadic crackle lines, but the coil lines, 2.0 to 3.5 cm. apart, are still evident on the interior surface. The ovoid-bodied jar measured 53 cm. in diameter and 30 cm. high to the prominent shoulder. The neck, 28 cm. tall, slopes inward to a diameter of 39 cm. and then curves outward to a mouth diameter of 46 cm. A prominent step 1 cm. wide marks the junction of the neck with the body. The everted rim is 4 cm. wide and increases slightly in thickness from 1.0 at the body wall to 1.6 cm. (Piratuba Plain shape 16).

Jar 39 was completely smashed and not reconstructible.

Jar 40 (fig. 171, *a′*) had fallen toward the west and lay half buried in the dirt with the contents destroyed. The neck surface is well smoothed but uneven, the body rough and covered with many fine crackle lines. The rounded jar has a body 45 cm. in diameter and 34 cm. high where it joins the tall, constricted neck at a prominent shoulder. The neck is 29 cm. tall and 30 cm. in diameter, with the mouth diameter 35 cm. and the rim diameter 40 cm. The everted, folded-over rim has a concave upper surface 2.5 cm. wide, a squared lip with rounded corners, and a total thickness of 2.1 cm. (Piratuba Plain shape 15).

Jar 41 (fig. 171, *b′*) lay on its side with the neck and shoulder broken and the contents scattered. Both surfaces are crackled and rough, with sherd temper particles visible. The externally thickened, everted rim 2.0 cm. thick, tapers to a rounded lip (Piratuba Plain shape 16). The body of the globular jar is 40 cm. high and 59 cm. in diameter, with a prominent shoulder where the 30 cm. high neck joins the body. The neck is 36 cm. in diameter with the rim diameter 43 cm.; body wall thickness ranges from 1.0 to 1.5 cm.

Jar 42 (fig. 171, *c′*) had fallen toward the southeast with the neck and rim broken off. Dirt inside contained white flecks of bone and a small complete bowl (B) 8 cm. from the bottom resting on the dirt. A large sherd covered the bowl and may be part of a former lid (A) of the jar. Inside the bowl, protected partially from complete decomposition by the sherd, were four scraps of large bone, probably femur fragments of a child, but the condition of all bones in the urn was too poor to permit conclusive statements. The vessel surfaces are uneven with crackle lines and particles of sherd temper visible. The vessel is only 48 cm. tall with a neck 15 cm. long and 32 cm. in diameter, an everted, exteriorly thickened rim (Piratuba Plain shape 15), a body diameter of 40 cm. and a decided groove where the neck joins the shoulder. A decorative rib 5 mm. high and 10 mm. wide is applied 4 cm. below the rim. It bears a row of small rings, 6 mm. in diameter and spaced 5 mm. apart. The impression is so crudely done that the rings are often incomplete as a result of being placed too near the edge of the rib surface.

Lid A consisted of several large fragments of a bowl that may have been inverted over the jar as a lid. It measures 36 cm. in mouth diameter, 12 cm. in diameter at the rounded base, 18 cm. in depth, and 8 mm. in body wall thickness. The base is 1.6 cm. thick and the rim thickened on the interior to 1.6 cm. with a 2.5 cm. bevel tapering to a rounded lip with a small groove (Piratuba Plain shape 1). The coil marks are not well erased, smoothing tracks are quite common and all surfaces are irregular and uneven with many crackle lines.

Bowl B (*pl. 105, b*) was completely restored, forming a miniature bowl of shape 3 of Piratuba Plain. It is slightly asymmetrical measuring 13.0 to 13.5 cm. in diameter at the mouth, 8.8 to 9.5 cm. high, and 4.5 cm. in diameter at the flattened base. Body wall thickness ranges from 4 to 6 mm., base thickness 8 mm., and rim thickness 6 mm. The rim is formed by a slight folding over of the coil and has a rounded lip. The exterior and interior surfaces are not grossly uneven, as is typical of so many of the miniature vessels, but rather undulating and rough to the touch from the protruding ground sherd temper particles. The vessel is so asymmetrical that the sidewalls curve outward gently on one side from a flattened but skewed base and are almost vertical on the opposite side.

Jar 43 (fig. 171, *d′*) had fallen on its side to the north and broken into several large pieces, destroying its original contents. Both surfaces are badly eroded and moss covered. Although smoothed, they are uneven and irregular with sherd temper particles protruding and with many crackle lines. The exteriorly thickened rim is 2.5 cm. wide, expanding from a body wall thickness of 1.2 cm. to 1.9 cm. and then tapering to a rounded lip (Piratuba Plain shape 16). A decorative row of large circles is impressed on the neck 11 cm. below the rim; they are 1.2 cm. in diameter, 2 mm. deep, and are spaced from 1.2 to 2.5 cm. apart. The low-waisted, round-bodied jar measures 50 cm. in body diameter and 38 cm. high to the shoulder, where it joins the concave-sided neck 45 cm. tall. Minimum neck diameter is 38 cm. and rim diameter 46 cm.

Jar 44 (fig. 171, *e′*) had remained vertical in the ground, but was badly broken and filled to the neck with light gray, fine dirt and roots, which had destroyed all evidence of bone. Exceedingly coarse particles of sherd temper are visible on the exterior surface along with fine crackle. The neck and rim exterior are smoothed and floated, but coil lines 6 cm. apart remain on the interior. The folded-over rim has a flat top 3 cm. wide, with a rim thickness of 2.7 cm. tapering to a squared lip with rounded corners only 1.3 cm. thick (Piratuba Plain shape 15). The body wall thickness is 1.0 cm. The proportions of this jar are such that the small, globular body is shorter than the long convex-sided neck. The body is 33 cm. high and 59 cm. in diameter, with the neck 37 cm. high and 45 cm. in diameter. The rim diameter is 50 cm.

Jar 45 consisted of the badly crushed fragments of a small jar completely surrounded by trees and roots.

Jar 46 was buried under a tree and impossible to reconstruct.

M-5—MULATINHO

Just inside the fringe of forest at the end of a long finger of *campo* (fig. 150) along the left bank of the upper reaches of the Igarapé Jacaré several large *sumahuma* trees, many spiny canes, and a network of vines grew out of a mass of broken burial jars. Heavy forest surrounded the cemetery, with the nearest *campo* 40 meters to the northeast. All the vessels were badly broken and scattered, with most of the smaller sherds completely buried. The ground surface was very irregular, with the point of most concentration of sherds 50 cm. above the elevation of the surrounding area. This high spot measured about 3.5 meters in diameter and contained a tree 17 cm. in diameter (fig. 173). The root mat of this tree extended 18 cm. below the surface; beneath this mass, sherds of a great variety were piled one on top the other to a depth of 48 cm., at which point the soil became the sterile, heavy clay with orange flecks typical of the island. At no place in this site did the fire-burnt clay lumps occur, which are so common in habitation sites. Fragments of jars fitting together and found close together suggest that a number of large jars had at one time been concentrated in this spot. Now they lay in a confused mass of jar fragments, large sherds used as wedging, and contents which included miniature vessels, glass trade beads, two pieces of nephrite, and a fragment of rusty iron. By careful excavation of

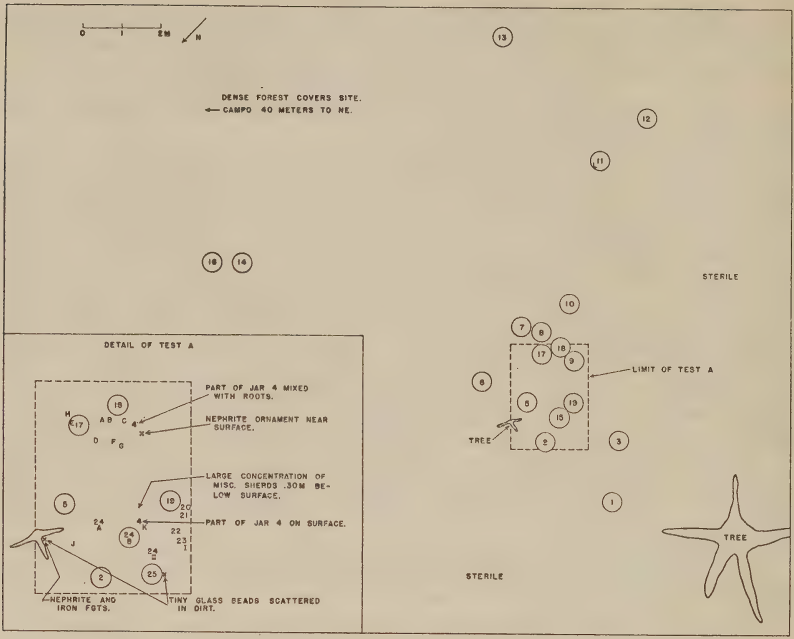

0
1
2M
N
DENSE FOREST COVERS SITE.
CAMPO 40 METERS TO NE.
13
12
11
16
14
STERILE
10
7
8
17
18
9
LIMIT OF TEST A
6
5
19
15
TREE
2
3
1
TREE
STERILE
DETAIL OF TEST A
PART OF JAR 4 MIXED WITH ROOTS.
NEPHRITE ORNAMENT NEAR SURFACE.
LARGE CONCENTRATION OF MISC. SHERDS .30M BELOW SURFACE.
PART OF JAR 4 ON SURFACE.
NEPHRITE AND IRON FGTS.
TINY GLASS BEADS SCATTERED IN DIRT.
H
A B C
D F G
J
K
I
20
21
22
23
24 A
24 B
24 E
25

FIGURE 173.—Plan of M–5—Mulatinho, a cemetery site of the Aruã Phase, showing the position of the burial jars and other objects.

the basal fragments it was possible to plot the location of 25 large burial jars with some of them 7 to 8 meters from the main concentration (fig. 173). The central grouping of vessels seemed to be along a southeast-northwest axis. In addition to these vessels, hundreds of sherds came from a 2- by 2-meter test pit, test A, on the highest part of the site. Of these, 1,200 body sherds were counted and classified as Piratuba Plain and left in the field; all rim, base, and diagnostic body sherds were brought into the laboratory. Tiny glass beads of several types came from two main parts of the site; at one time these may have been inside the various jars but their contents had long ago been scattered. The damage to the site is not due to natural factors of the encroachment of the forest, but appears to be the result of conscious and intentional destruction of the cemetery. It was not possible to determine whether this was an early act aimed at stamping out pagan beliefs or a more recent "amusement."

The original pattern of burial jar arrangement and the associated platterlike lids and small vessels, beads, and other offerings conform to that found at M–4—Fundo das Panellas. The discussion will first give the specific details about those large burial jars whose location could be determined with some degree of accuracy, followed by a description of miniature vessel fragments and nonceramic objects whose particular jar association was no longer apparent. All the pottery fragments represent examples of Piratuba Plain. Reference to the ground plan of the site (fig. 173) throughout the discussion will help to clarify the scrambled mass and give an impression of the burial pattern.

Jar 1 (fig. 179, *l*), with many large broken fragments jutting 15 cm. above the ground and covered with moss, had been the cause of the discovery of the site by a *caboclo* who was hunting in the area. The vessel had fallen on its side to the northwest and large tree roots had grown through it. A large mass of miscellaneous sherds came from a position that indicated they formed the original contents. A large rim and neck sherd from this jar were later uncovered 2 meters south of this concentration. Although the neck is well smoothed the tracks are still visible. The flattened base measures 12 cm. in diameter with an ovoid body 59 cm. in diameter and 50 cm. high, curving inward from a prominent shoulder to a neck 44 cm. in diameter and 28 cm. high with an everted rim 50 cm. in diameter. The body wall ranges from 1.2–1.5 cm. thick with a stongly everted, thickened rim, 3.0–3.5 cm. wide and 2 cm. thick, having a flat lip with rounded corners (Piratuba Plain shape 12).

An associated rim sherd is from another large burial jar with an everted rim 4.4 cm. wide tapering from 1.9 cm. to 1.4 cm. at the squared lip with rounded edges (Piratuba Plain shape 16). A thickened rib 8 cm. below the rim carries a row of impressed circles 7 mm. in diameter and 1.1–1.4 cm. apart.

Jar 2 (fig. 179, *m*) had been smashed and buried except for half of the rim lying on the surface. Fragments of this jar were scattered over several meters with portions of the rim at either extreme. The base was still in position in the ground with fragments of bone, some charred, mixed in the associated dirt. One bone scrap was large enough to be identified as an adult femur. The vessel had a large globular body measuring 76 cm. in diameter, with a flattened base 16 cm. in diameter. The 34 cm. high neck curved inward to a diameter of 56 cm., with the total height of the jar 88 cm. Rim diameter is 70 cm. The everted rim forms a sharp angle with the neck wall and measures 7 cm. wide, tapering from a body wall thickness of 1.6–1.8 cm. to 2.5 cm. at the squared lip with rounded corners (Piratuba Plain shape 12). An impressed row of circles, 9 mm. in diameter and spaced 5–9 mm. apart, occupies a raised rib 6 mm. above the surface wall and 9 cm. below the rim.

Jar 3 was so badly damaged, scattered, and buried underneath the roots of a tree that it could not be completely reconstructed. The fragments indicated a very poorly made jar, not only irregular on the surfaces but asymmetrical in shape. Both surfaces show heavy crackle, with large hunks of temper protruding. The thickened rim, enlarged from body wall thickness of 1.8 cm. to 2.5 cm. tapers to a squared lip with rounded corners only 1.2 cm. wide (Piratuba Plain shape 15). The rim, which forms a sharp angle with the neck wall, measures 3.8–4.3 cm. wide. Rim diameter is 52 cm.

Jar 4 (fig. 174) is an anthropomorphic vessel broken into many pieces and mixed with the thicker body sherds of adjacent jar 24, miniature vessel K, and jar 18. The whole mass was entangled in roots. One ear and eye were found beneath the ground 1 meter to the southwest of the first group of fragments. Upon reconstruction the vessel body consists of large tiers 6–7 cm. wide formed by the thickening of the body wall with an extra coil, rising 8 mm. above the surface. The exterior surface is well smoothed and regular except for a few slightly uneven areas and is more even than the usual range of Piratuba Plain. Crackle lines are almost absent, but small pits from water bubbles are quite common. Evenly distributed, ground-sherd temper particles show on the surfaces. The anthropomorphic features are limited to the face, which is modeled with applique on the upper wall as it curves backward over the top of the vessel. The jar mouth is at the back, its upper edge formed by the diadem that rests on the forehead of the face. The ears are flat, elongated strips that protrude diagonally 3.0–3.5 cm. above the surface of the face. The lower edge is perforated for the attachment of an ornament. The nose is a similar vertical strip, which projects 2 cm. and the eyebrows are less prominent, horizontal strips 10 mm. high. The eyes are nubbins centered below the brows, and the mouth is formed by a strip 5 mm. thick applied as an oval. The dimensions are: greatest body diameter 30 cm.; height to top of opening 30 cm.; opening width 8.5 cm., length 23 cm.; crown width 2.5 to 3.0 cm.; nubbin projections on crown 1.5 cm. high and 1.0 cm. in diameter; right ear 3.0 cm. wide, 9.5 cm. long; left ear 3.5 cm. wide and 8.5 cm. long; both ears perforated with 3-mm. hole 1.5 cm. from the bottom and 2.5 cm. from the face; applique mouth 3.5 cm. long, 1.5 cm. wide, and 5 mm. thick and rising 1.2 cm. above the body wall; the applique nose 6.5 cm. long, 1.5 cm. wide, 2 cm. high; eyes 1 cm. in diameter, 7 mm. above body wall; eyebrows 3.5 to 4.0 cm. long, 6 mm. wide, 10 mm. high, and 2 cm. above the eyes.

Jar 5 (fig. 179, *n*) was located by the pieces of the rim and neck projecting from the ground. The globular body, 44 cm. in diameter with a flattened base, was buried in the ground. The body wall thickness is 1.5 cm. with the surfaces covered with crackle lines, smoothed but still uneven and irregular with the smoothing striations quite visible. The neck walls slope inward from a prominent shoul-

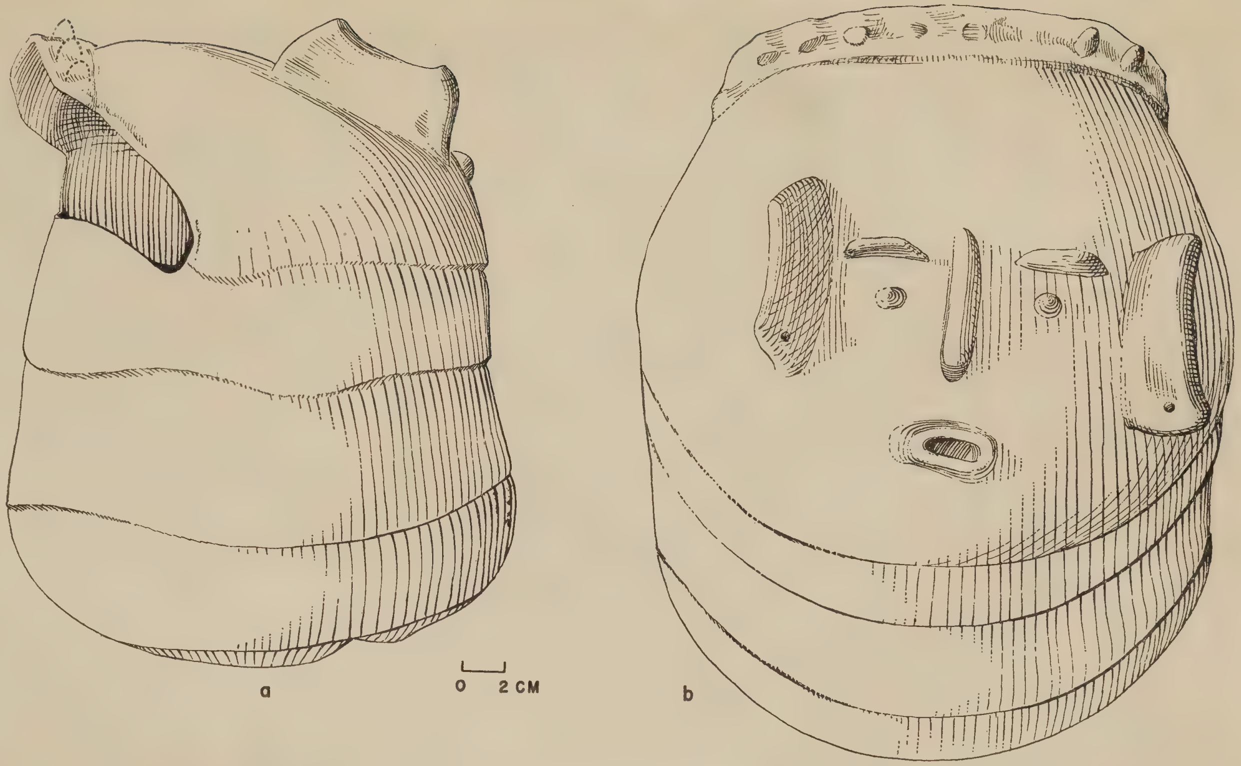


FIGURE 174.—Aruã Phase anthropomorphic vessel 4 from M-5—Mulatinho.

der forming a neck 34 cm. in diameter, 31 cm. tall, and with a rim diameter of 38 cm. The thickened rim is 3.5 cm. wide, 2.2 cm. thick, squared with rounded corners (Piratuba Plain shape 15).

Jar 6 is represented by several fragments from the neck of a large jar scattered over several meters. No rim sherds or body sherds were found.

Jar 7 is also fragmentary, consisting of a badly broken, slightly flattened base.

Jar 8 (fig. 179, *o*) lay broken with the neck at one point and the body just to the northeast. Reconstructed, the jar has a depressed globular body with flat base and a prominent shoulder where it joins the neck. The surfaces are covered with crackle and fine pits, with the neck exterior smoothed but extremely irregular. The everted rim is thickened to 1.6 cm. but tapers to a rounded lip 5 mm. wide (Piratuba Plain shape 16). Body diameter is 50 cm., neck height 20 cm., neck diameter 40 cm., rim diameter 42 cm. with the overall vessel height reconstructed to 60 cm. A rib raised 2 mm. above the neck wall and 7.5 cm. below the rim is impressed with a series of circles 6 mm. in diameter and 4 to 9 mm. apart.

Jar 9 had the fragments badly scattered, and the shape could not be reconstructed. Digging around the tree roots revealed a spot where the friable dirt, flecks of bone, and some miniature vessel fragments suggest materials associated with this jar. Vessels F and G (p. 490) were probably inside this jar and the others nearby may have been associated, but the disturbance is too great to permit a definite determination.

Jar 10 had the base still in the ground, with the round body fragment measuring 60 cm. in maximum diameter; no other neck or rim fragments could be found.

Jar 11 (fig. 179, *p*) was upright, buried to the shoulder in the ground and intact except for a large neck sherd that had fallen inward over the mouth, protecting the contents from weathering. The light gray, powdery dirt in the lower 25 cm. of the body contained sherds and bone including large fragments of long bones and charred bits of a skull. Above these, at 28 cm., were sherds from a small vessel. The remainder of the jar was filled with leaves, twigs, and similar debris. Miscellaneous sherds had been wedged around the small base to support it in a vertical position. The surfaces showed marks of a smoothing tool, but remained uneven and were covered with crackle lines. Coil junctions visible on the exterior of the shoulder indicated coils 2.3 cm. thick. The elongated, ovoid body measures 55 cm. in diameter and 44 cm. high. The neck forms a prominent shoulder with the body; it measures 20 cm. long, 45 cm. in diameter, with the rim diameter 48 cm. The thickened, everted rim (Piratuba Plain shape 16) is 3.5 cm. wide and 2.0 cm. thick as compared to the body wall thickness of 1.5 cm.

Jar 12 (fig. 179, *q*) lay scattered over a 2 by 2 meter square area. The surfaces have crackle lines and show evidence of smoothing, but are still very irregular and uneven. Reconstructed, the vessel measures 80 cm. tall, 59 cm. body diameter with the neck 38 cm. high and 41 cm. in diameter, rim diameter 50 cm. The everted rim is 4 cm. wide and attains a thickness of 1.8 cm. (Piratuba Plain shape 16). A rib, 8 mm. high and 1.0 cm. wide placed 8 cm. below the rim, is impressed with a row of circles, 6 mm. in diameter and spaced 8 to 12 mm. apart.

Jar 13 was detected by a deep depression in the ground. Fragments of the neck and body were scattered over an area of several meters with the base in the ground, which was badly broken by roots; however, small fragments of bones were still visible inside. Unfortunately, insufficient sherds were found to restore the vessel, which had an elongated, ovoid body 38 cm. long and 60 cm. in diameter.

Jar 14 had fallen on its side toward the west, was badly broken and had a tree growing in its midst. The neck was well smoothed but coiling lines are visible at the shoulder. The rim is missing. The body reconstructs to an elongated ovoid, 50 cm. high, 55 cm. in diameter with a flattened base 18 cm. in diameter. The neck forms a prominent angle where it joins the shoulder, with the existing neck fragment measuring 35 cm. in diameter.

Jar 15 (fig. 179, *r*) was broken, mixed with sherds from jars 2 and 4 and a group of fragments from unidentifiable jars. The surfaces are irregular with a large amount of crackle. Sufficient sherds were recovered to reconstruct it as a jar with a depressed-globular body, a flat base, and a prominent shoulder where the insloping neck joins the body. It measures 40 cm. in body diameter, 28 cm. in body height, and 17 cm. in base diameter. The neck is 15.5 cm. high with a diameter of 25 cm. and a rim diameter of 30 cm. The everted, thickened rim is 2.5 cm. wide, and 1.3 cm. thick, with a rounded lip (Piratuba Plain shape 15).

Jar 16 consists of the concave bottom of a large jar found west of jar 14, with fragments of a rounded body broken and scattered over several meters. No rim sherds are associated with these fragments.

Jar 17 is represented by a base found 40 cm. below the surface, with fragments indicating a body 40 cm. in diameter. The rest of the vessel is missing. Inside were dirt with flecks of bone and miniature vessels E and H.

Jar 18 is another vessel represented only by a base buried 40 cm. below the surface, filled with light gray, friable dirt, and miscellaneous sherds. Miniature vessels A, B, and C were nearby.

Jar 19 is another base of a large vessel filled with friable gray dirt, and found buried 25 cm. below the surface.

Jar 20 was shattered, with sherds scattered around jar 21. The surface is well smoothed and more even and regular than typical of Piratuba Plain from the site, with few crackle lines. The shape is also deviant, with a strongly cambered rim, 3.3 cm. wide and tapering from 17 mm. at the junction with the body wall to 7 mm. at the rounded lip. The body diameter is estimated to be 40 cm. with the rim diameter 22 cm.

Jar 21, a thin-walled, globular jar with a strongly out-turned, thickened rim was found under some of the larger fragments of jar 20. The shape is not reconstructible from the sherds, but the mouth diameter measures 18 cm.

Jar 22 consists of only the flat bottom, 15 cm. in diameter, of a large burial jar, buried 25 cm. below the surface near the mass of badly broken sherds comprising jars 20 and 21.

Vessel 23 (pl. 106, *e*) is a zoomorphic, hollow figurine, complete except for a small part of the face. It came from 20 cm. below the surface, adjacent to jar 22 and above miniature vessel I. Although it is difficult to identify the animal, the heavy legs, short ears, wide mouth, and short tail suggest the *capibara*. The vessel stands 11.0 cm. high, with a total body length of 14.5 cm. The stumpy tail is 3 cm. long and 2 cm. in diameter at the base; the hollow, cylindrical legs are 3.5 cm. in diameter and 4.2 cm. long. The ears are 2.5 cm. wide and 1.5 cm. high, the mouth 4.3 cm. wide and 1.9 cm. high. Viewed from the rear, the animal leans slightly to the left, about 1 cm. from the vertical. The exterior surface is smooth but slightly uneven and eroded, giving a light tan to gray color. There are a few fire clouds on the legs. The uneroded surfaces are leather red brown.

Jar 24 is represented by base fragments buried 15 cm. in the ground (fig. 173–24B) and two adornos (fig. 173–24A and 24C) 75 cm. apart, on opposite sides of the jar base. It was impossible to reconstruct the large burial urn or to associate any rim sherds. The adornos are faces with the modeling fairly well done and suggesting the bat (fig. 175). Each head had been modeled and then affixed to the jar when fairly dry, hence they broke off easily leaving a smooth edge. The surfaces are well smoothed. Although closely similar in appearance, there is a slight difference in measurements. One is 8.5–9.0 cm. in diameter at the base and 5.5 cm. high; and the other 8.8–9.0 and 6.0 cm. for the same dimensions. The ears are 3.0 and 3.5 cm. wide, extending 1.3 and 1.5 cm. above the face. The eyes are slight impressions made with the finger, measuring 4 mm. deep and 1.3 and 1.4 cm. in diameter. The mouth is a raised nob of clay, 1 cm. high and

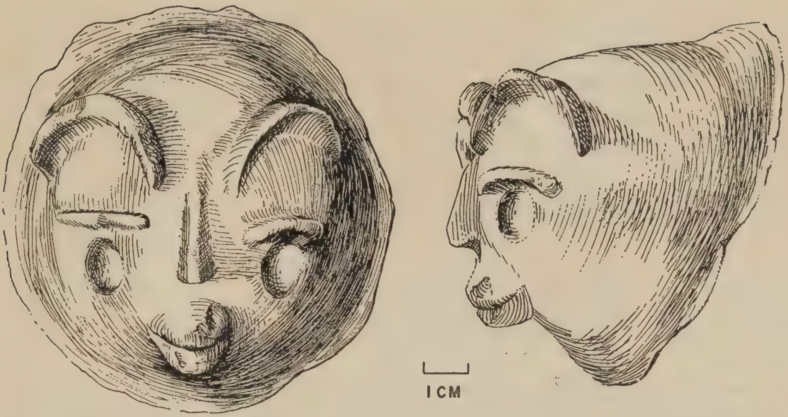


FIGURE 175.—Aruã Phase zoomorphic adorno from jar 24, M–5—Mulatinho.

1.5–2.0 cm. in diameter, with an incision 1.5 cm. long and 2 mm. deep. The nose measures 2.4 cm. long, 7 mm. high, and 7 mm. wide.

Jar 25 is another base of a large jar, containing light-gray dirt and many sherds. The flat base, 12 cm. in diameter, lay upside down 30 cm. below the surface.

The miniature vessels probably all originally from inside or near the various jars but now scattered throughout the site are described in detail below. They all are examples of Piratuba Plain.

Vessel A (pl. 106, *a*) was buried near vessel B, 30 cm. below the surface in light gray dirt, about halfway between the bases of jar 17 and jar 18. The interior surface is creamy white, the exterior slightly grayer and spotted with a few fire clouds. Both surfaces are rough and slightly irregular with traces of the 2.5-cm.-wide coils still visible. The exterior surface is scratched and scarred and there is sporadic protrusion of ground sherd temper particles. The rim 1.0 to 1.2 cm. wide and 8 to 10 mm. thick is folded over and the fold partially obliterated. The lip is squared with rounded corners. The flat base is 5.5 cm. in diameter. The vessel walls are slightly asymmetrical and irregular in thickness, ranging from 5 to 7 mm. The height is 9.2 cm, exterior body diameter 10.3 cm., and exterior rim diameter 9.5 to 9.8 cm.

Vessel B (pl. 106, *b*) has the same surface texture and color as vessel A. The rim is unevenly folded over and the vessel walls are slightly asymmetrical, ranging from 4 to 7 mm. in thickness. The rim is 9 to 13 mm. wide and 6 mm. thick, with a squared lip with rounded corners. The flat base is 8 cm. in diameter, the body 11 cm. in exterior diameter, total height 8.5 cm. and rim diameter 10.1 to 10.3 cm.

Vessel C (pl. 106, *c*) lay buried 30 cm. below the surface, 25 cm. east of jar 18 near a fragment of jar 4. The surfaces are badly eroded. giving a cream-white color, but some areas show the typical orange tan of Piratuba Plain. The surfaces are smoothed but uneven, with many ground sherd temper particles protruding. The bottom is flat but not even, so the small vessel rocks slightly. The sides are not symmetrical, one being more rounded and less angular than the other. The rim is thickened on the exterior but not folded over. Height is 12.2 cm., body diameter 16.5 cm., base diameter 8 cm., mouth diameter 12.5 cm. The rim is 1.2 to 1.4 cm. wide and 6 mm. thick as compared to the body wall thickness of 5 mm., and a base thickness of 12 mm.

Vessel D came from a spot not far from vessels A, B, F, and G, buried 28 cm. below the surface and surrounded by soil containing bone scraps and similar in texture to that found in the large burial jars. The small shallow bowl measures 9.3 cm. in mouth diameter and 4.5 cm. high. The pedestal base is broken but the fragment measures 4 cm. in diameter and 2.2 cm. at the thickest point. The surfaces are slightly uneven, but the vessel as a whole has good symmetry.

Vessel E was found intact inside the base of jar 17. It is a small open bowl with outcurving sidewalls and an everted rim. The surfaces are uneven and temper particles protrude. The rim tapers to a thin lip and the mouth is poorly formed and asymmetrical. Exterior diameter of the body is 13 cm., mouth diameter 17 cm., and body height 7 cm.

Vessel F consists of several fragments of a small bowl found buried near vessel G, 30 cm. below the surface, filled with small sherds and surrounded by dirt flecked with bone particles. Although larger in dimensions, the shape is similar to vessel A. The surfaces are smoothed but still quite uneven, a trait characteristic of Piratuba Plain. The rim is thickened on the exterior, forming a band 1.3 cm. wide and 7 mm. thick. Rim diameter is 16 cm., body diameter 18 cm. The height of the existing fragment is 5.7 cm., with the total height probably around 8 to 9 cm. The basal fragments were not found.

Vessel G, associated with vessel F, did not have sufficient fragments for complete reconstruction. The everted rim is externally thickened with an extra coil measuring 7 to 8 mm. thick and 1.2 cm. wide, with a rim diameter of 12 cm. Smoothing marks parallel to the rim are prominent on the exterior, which is uneven with occasional temper particles protruding.

Vessel H, although larger than vessel B, is similar in shape and of comparable asymmetry. It came from inside jar 17 in association with Vessel E. The surfaces are very rough and uneven, with a few smoothing marks parallel to the rim on the exterior. The externally thickened rim is 1.5 cm. wide and 6 mm. thick, with the body wall thickness ranging from 4 to 6 mm. The base is flattened, 4.5 cm. in diameter, but so irregular that the small bowl does not stand firmly. It is 12 cm. in mouth diameter and about 14 cm. high.

Vessel I lay beneath the zoomorphic figurine, vessel 23. Only rim fragments were found, but they reconstructed into a miniature, open bowl with slightly outslanting sides and an everted rim with a mouth diameter of 16 cm. The surfaces are uneven and the upper rim edge is highly irregular.

Vessel J (pl. 106, *d*) lay near a series of large sherds 15 cm. below the surface. The small bowl is extremely crude, with uneven walls ranging from 8 mm. to 20 mm. in thickness. The surfaces are highly irregular with many small pits and protruding temper particles. The flat base measures 6 cm. in diameter, the body diameter 10 cm., with the mouth diameter ranging from 8 to 9 cm., and the height from 7 cm. on one side to 9 cm. on the other.

Vessel K was mixed with so many fragments of larger vessels that it is impossible to associate it definitely with any one of them. It is a small bowl with a finger-pressed ornamentation on the rim exterior. The base is flattened and even, but the vessel as a whole is very asymmetrical and the rim surface unlevel. Broad smoothing marks cover the exterior except the bottom and suggest the use of a polishing stone or seed. The interior is as even as the exterior, but without smoothing tracks. Height is 8 cm., base diameter 7.5 cm., rim diameter 13.2 cm., rim width 1.1 to 1.2 cm. The body wall thickness varies from 4 to 7 mm. with the base thickness 11 mm. The rim is decorated by pushing up the rim coil with the thumb in a counterclockwise direction, forming undulations 1 cm. wide and rising 2 to 3 mm. above the vessel wall.

Vessel L came from inside Jar 11. The surfaces, although smoothed, remain slightly irregular in places with the interior rough because of protruding temper particles. The flattened bottom has a concave center on the exterior and is thickened to 1.5 cm. whereas the body wall thickness ranges from 4 to 6 mm. The rim appears to be a separate coil measuring 6 mm. thick and 1.0 to 1.5 cm. wide. The vessel is slightly asymmetrical. The mouth is oval, 11.5 to 13.5 cm. in diameter, the maximum body diameter 16 cm., the vessel height 12.5 to 13.0 cm. and the base diameter 7.5 to 8.3 cm.

Several nonceramic objects came from M–5:

Nephrite pendant (*fig. 176, b*).—A flat, semicircular piece of nephrite, with a conical hole drilled from one side near the curved edge, was found with sherds of jar 4. The stone is a pale, grayish-green nephrite with a few lines of brownish impurities. The surfaces are well polished and very smooth, with the edges polished smooth and rounded

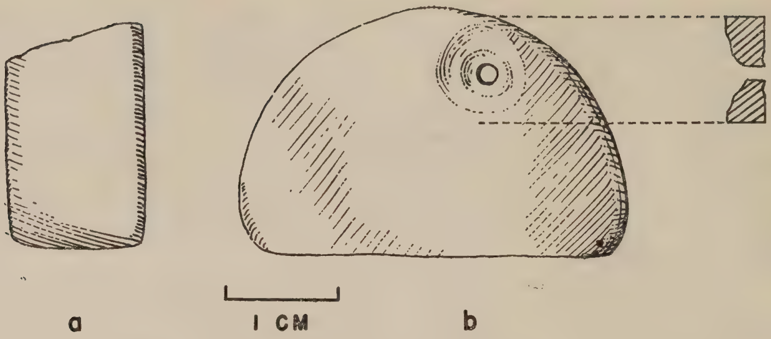


Figure 176.—Aruã Phase nephrite pendants from M–5—Mulatinho.

slightly. The flat edge is straight, measuring 3.4 cm. long. Maximum width is 2.2 cm., thickness 3 mm. at the lower, straight edge, tapering slightly to 2 mm. at the upper edge. The perforation is 4 mm. in diameter on one surface, tapering to 1.5 mm. at the exit on the opposite surface. It is possible that this pendant may have been an ornament for the perforated ear lobe of the anthropomorphic jar 4, an idea further suggested by the location of this nephrite pendant near one of the ear fragments of jar 4.

Nephrite object (*fig. 176, a*).—This fragment is probably part of a rectangular pendant. The stone is slightly grayer than the other nephrite object but is still within the light-green color range. All surfaces are well smoothed. The sides are straight and parallel, joined to the straight base by rounded corners. The fragment measures 2 cm. long and 1.3 cm. wide. Thickness is 2 mm. at the broken edge and 1 mm. just above the base, which tapers to a thin edge in contrast to the flat sides.

Iron fragment.—This scrap is 1.4 by 1.8 cm. and 1 mm. thick. In its present rusted condition, it is impossible to determine whether it was acquired by European trade or is of more recent *caboclo* origin.

Glass Beads.—Beads of European origin represent six varieties (table S).

Table S.—*Glass beads from M–5—Mulatinho*

Color	Description	Count
Porcelain white	Small "seed" beads ranging in shape from flat disks to barrel shape, with the largest 4 mm. in diameter and 2.5 mm. thick, and the smallest 2.5 mm. in diameter and 1.5 mm. thick.	55
Light to dark blue	Small "seed" beads, with the same shape and size as above	14
Clear glass with porcelain-white stripes inside.	Round, 8 mm. in diameter	1
Porcelain white	Oval; length 6–7 mm., diameter 5 mm.; diameter of perforation 0.5 mm.	5
Sky blue	Barrel shaped, 5 mm. long, 4 mm. in diameter	1
Sky blue	Flat disk 3 mm. long, 5 mm. in diameter	1
Total		77

Caviana

C–1—TESO DAS IGAÇABAS

This Aruã cemetery is 1 km. in from the southeastern shore of Caviana (fig. 151) in the midst of one of the more densely populated parts of the island. It has undergone considerable disturbance, having been exploited by the *caboclos* for a number of years as a source of sherds to pulverize for tempering their pottery. This site is such a well-known source that one of the children accompanying us was convinced that its renown had reached America and we had come to get sherds for that purpose. Such continuous and systematic removal of vessels, plus trampling by cattle and frequent burning of the grass on the site have wrought considerable changes in the cemetery and have reduced the vessels to a state of confusion that makes it difficult to reconstruct the burial pattern or even the vessels used.

No surface indications of the existence of a site remained. Excavation revealed the cemetery to extend approximately 100 meters east-west by 40 meters north-south, and to be limited to a slight natural rise giving an elevation of 50 to 60 cm. above the adjacent terrain. The soil was light gray, sandy, and well drained. Sherds were present between 5 and 35 cm. below the surface. The southern part of the site was covered with grass, while the northern part had a light growth of cane and small trees.

The area covered by the cemetery was tested for sherds, and they were found to exist with varying degrees of concentration, being most numerous where the surface showed a slight depression. A 5 by 5 meter square near the center of the northern edge was given the most thorough investigation and fragments of six jars were located. Another vessel, jar 7, with unusual modeled decoration (fig. 177) was excavated 30 meters to the south. Details of these vessels, all examples of Piratuba Plain, are as follows:

Jar 1 was an intact portion of the neck and shoulder of a large jar, with the rim broken off and the rest of the body unreconstructible. The diameter of the vertical neck was 30 cm. It was found upright 5 cm. below the surface, with sherds of various sizes inside, outside, and beneath it to a depth of 30 cm.

Jar 2 was a rounded base fragment resting upright 35 cm. below the surface. Sherds associated indicated a concave neck, an exteriorly thickened rim with a square lip, and mouth diameter of 28 cm. There were traces of a reddish finish that may have been produced by rubbing the wet vessel surface with red ocher before firing.

Jar 3 was represented by a base, upright 25 cm. below the surface, and fragments of a body 25 cm. away. The base was slightly concave (fig. 181, *B*), 12 cm. in diameter, with the walls sloping upward to a body diameter of 28 cm. at the existing height of 22 cm. Sherds from the rim show considerable variation in angle and width of the exterior thickening, but may belong to Piratuba Plain shape 14. Mouth diameter was 54 cm.

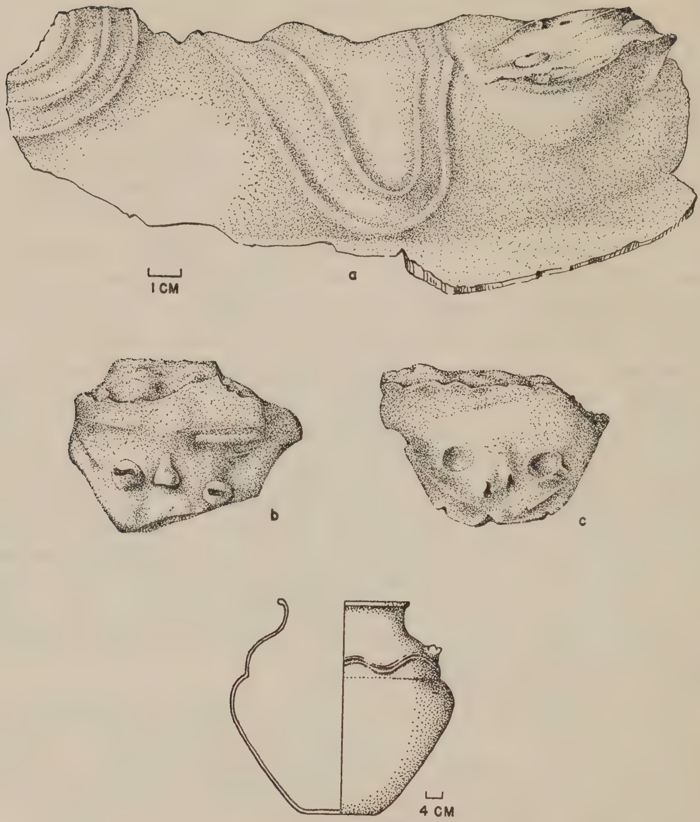


FIGURE 177.—Detail of modeling on jar 7 from the Aruã Phase Site C–1—Teso das Igaçabas and a reconstruction of the vessel to which it belonged.

Jar 4 was part of a bowl (Piratuba Plain shape 7) lying upside down in the ground. The surfaces were smoothed, but very uneven and irregular. Walls curved outward and then upward to a direct rim with a rounded lip and a mouth diameter of 30 cm.

Jar 5 was lying partly on its side 2 cm. below the surafce. The base was intact and the dirt inside contained a few small bone fragments, all too badly disintegrated for identification. No rim fragments were encountered. The base was slightly concave (fig. 181, *B*), 24 cm. in diameter, and joined the walls at a sharp angle. At the existing height of 35 cm., body diameter was 56 cm.

Jar 6 was broken into large sherds and scattered over an area of 1 meter at a depth of 5 to 10 cm., mixed with sherds from other vessels. The jar had a flat base of the pedestal type (fig. 181, *C*) 18 cm. in diameter, a rounded body terminating in a slightly constricted, exteriorly thickened rim with a rounded lip and a mouth diameter of 24 cm. The body was ornamented on the exterior with applique pairs of strips forming irregular, undulating rows with applique nubbins between them at intervals (pl. 110, *a*, *b*; fig. 199, *a*). Narrow vertical applique strips occurred on the rim exterior. Associated with this jar was one of the shallow, flat-bottomed bowls or lids (Piratuba Plain shape 8), ornamented with 4 parallel rows of applique on the rounded lip.

Jar 7 was found with the lower part intact and upright in the ground, its upper edge 8 cm. below the surface. The interior was filled with dirt containing many sherds, including three with crudely modeled heads (fig. 177) and bone fragments representing the femur, scapula, clavicle, and parts of the skull but no teeth. These were examined by M. T. Newman (pers. comm.), who identifies them as subadult or adult, with no evidence of more than one individual. The intact part of the vessel had a flat base 19 cm. in diameter, sides outsloping to a maximum body diameter of 54 cm., then curving inward to form a rounded shoulder. The fragments with applique decoration found inside appear to have fit on the neck giving it a convex profile (fig. 177), constricting just below the everted, exteriorly thickened rim. Mouth diameter was 30 cm. Parts of a large bowl (Piratuba Plain shape 4) with reddened surfaces and a mouth diameter of 38 cm. were found 33 cm. to the south of the jar, and may represent a former lid.

C–4—TESO DOS INDIOS

This badly damaged cemetery site is near the headwaters of the Igarapé Pacajá, which flows toward the southeastern coast of Caviana (fig. 151). It occupies the southern end of an area of slight elevation that extends for about 1 km. toward the north. A small shallow lake lies just to the south and a branch of the *igarapé* passes within 300 meters of the site. The whole area is covered with forest and one of the largest trees was a giant *sumahuma* (*Ceiba pentandra*) with a 4-meter root spread growing in the center of the burial area (pl. 101, *a*). Much of the destruction to the jars was wrought by this tree, and a number of sherds were embedded solidly in the wood.

Tests revealed sherds and broken vessels on all sides of the tree except the west, the majority concentrated within a radius of 4 meters from the center of the trunk (fig. 178). Nimuendajú reports removing sherds and vessels from the west side of a similar tree on a site in this area (cf. p. 522). It is probable that his site and ours are the same, which would account for our failure to find anything on the west side of the tree. No sherds were deeper than 20 to 25 cm., with most of the fragments on the surface. In spite of the damage, it was possible to reconstruct 18 burial jars. Their style and the character of the site indicate a pattern comparable to that at M–4—Fundo das Panellas.

The detailed characteristics of the jars, all examples of Piratuba Plain, and the circumstances of their discovery are as follows:

Jar 1 (fig. 179, *a*) had the neck and rim broken off, but the base had remained vertical in the ground. Among the fragments was the rim sherd of a large shallow bowl (Piratuba Plain shape 6) with a diameter of 32 cm., which may have been part of a cover for jar 1 or jar 2. The jar had a flat bottom 15 cm. in diameter, sharply demarcated from the body wall, an insloping neck and folded over-rim (Piratuba Plain shape 17). Surfaces were even and regular except for the rim. Maximum body diameter 33 cm., rim diameter 28 cm., reconstructed height 35 cm.

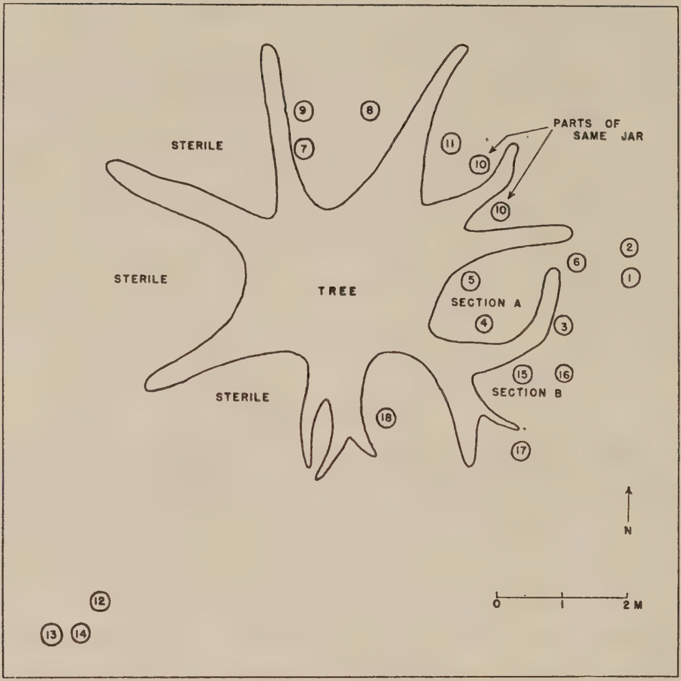


FIGURE 178.—Plan of C–4—Teso dos Indios, a cemetery site of the Aruã Phase, showing the location of the burial jars.

Jar 2 had fallen to the south and was badly shattered. The base remained intact, and beneath it were preserved a number of skeletal fragments, including pieces of the skull at the north, long bones piled along the south and west sides, miscellaneous fragments of ribs and pelvis, but no teeth. The jar had a flat base 20 cm. in diameter, a rounded body, and a crudely and irregularly folded-over rim 36 cm. in mouth diameter (Piratuba Plain shape 19). The surface was very uneven and rough to the touch.

Jar 3 (fig. 179, *b*) was represented by a base set at an angle in the ground, with the bottom toward the west, and miscellaneous small sherds. The rim was crudely folded over so that it formed a strip on the exterior varying from 2.0 to 2.8 cm. in width. The surface was smoothed but remained somewhat irregular. As reconstructed, this vessel is almost a duplicate of jar 1, with a base diameter of 13 cm., maximum body diameter 34 cm., mouth diameter of 28 cm. and reconstructed height of about 35 cm. (Piratuba Plain shape 17).

Jar 4 was so badly broken and scattered by the adjacent tree root that it could not be reconstructed. A fragment of the folded-over rim indicated a mouth diameter of 40 cm., and suggested Piratuba Plain shape 17.

Jar 5 was also destroyed by the tree, leaving only part of a flat base and miscellaneous small sherds.

Jar 6 was represented by a large fragment of the lower body leaning toward the south. Base diameter was 18 cm., maximum body diameter about 38 cm. and existing height (to shoulder) 24 cm.

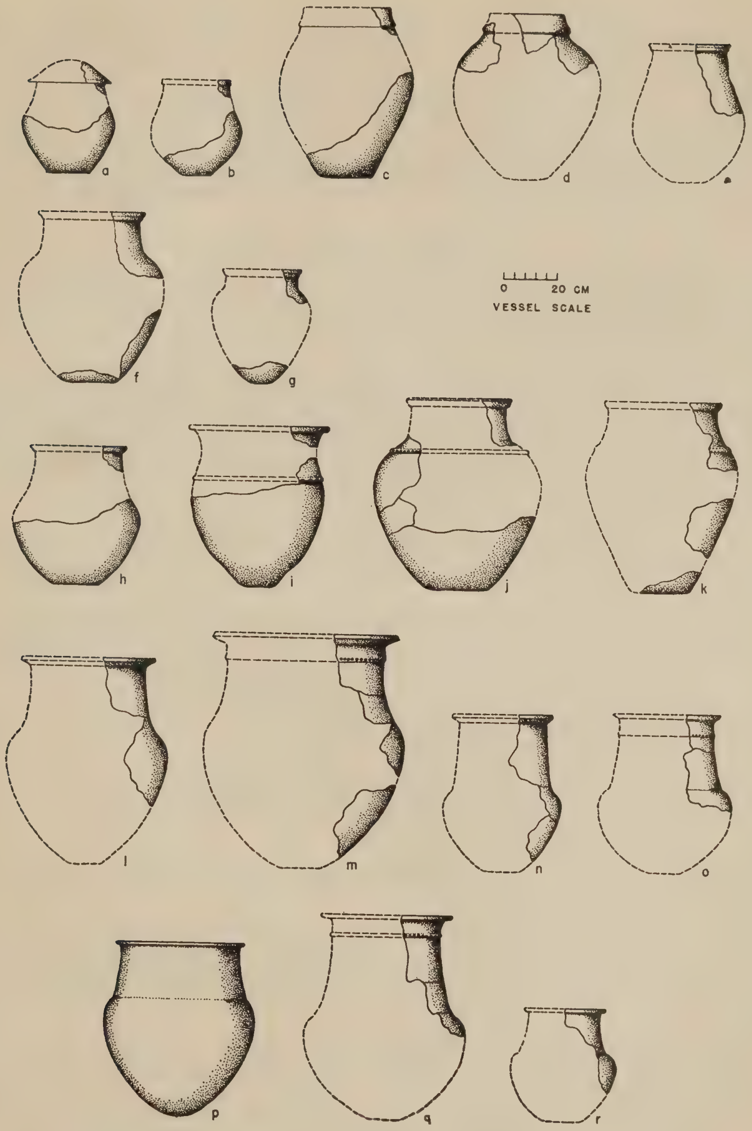


FIGURE 179.—Reconstructed jars from Aruã Phase cemeteries. *a–e*, C–4—Teso dos Indios. *f–g*, C–11—Vaquejador de São Sebasteão. *h–k*, C–12—Condino. *l–r*, M–5—Mulatinho.

Jar 7, on the north side of the tree, designates sherds from the exteriorly thickened rim of a thin-walled bowl (Piratuba Plain shape 3), found mixed with sherds from jar 9. The surfaces are well smoothed and even. The rim diameter of 34 cm. indicates that it could have served as a lid for jar 9.

Jar 8 (fig. 179, *c*) was about a meter east of jar 9, with the base and part of the body intact and lying on its side on the surface, with the bottom to the southeast. Body sherds were scattered for 1.5 meters to the south. The only rim fragment was 2 meters to the south and it is possible that it belongs to a vessel now buried under the tree rather than to jar 8. Both surfaces were smoothed but left very uneven so that the 2 cm. wide coils remain distinguishable. The base, flat on the exterior and slightly convex on the interior, has a diameter of 20 cm. (fig. 181, *A*). Maximum body diameter was 50 cm., existing height (to the shoulder), 35 cm., rim diameter 32 cm.

Jar 9 is represented by only three large sherds from the rim and neck. These show a folded-over rim with a diameter of 30 cm. and a sloping neck 15 cm. in height, separated from the large body by a slight constriction (Piratuba Plain shape 13). Both surfaces were smoothed but slightly rough, with a few crackle lines and fine pits.

Jar 10 (fig. 179, *d*), northeast of the tree, was bisected by a root so that parts were on opposite sides (fig. 178). It had a flat base (fig. 181, *A*), large globular body (indicated by numerous, gently curving body sherds), set off by a slight constriction from the insloping, collarlike neck ending in a direct rim with a mouth diameter of 28 cm. (Piratuba Plain shape 13). Both surfaces were smoothed, with the exterior very even as a result of floating.

Jar 11, just northwest of jar 10, was largely destroyed by the tree. The few remaining sherds indicate a flat bottom and an everted rim with a diameter of 34 cm. The curvature of the body wall below the rim suggests a globular jar of Piratuba Plain shape 19.

Jars 12, 13, and 14 were indicated by large bases 5 meters southwest of the nearest edge of the main concentration of the cemetery. Jars 13 and 14 were sideways with their broken edges overlapping; jar 12 lay a little to the northeast and upside down. Many thick body sherds were scattered in the surrounding dirt, but no rims were recovered. Base diameters were 19.5 cm., 17.5 cm., and 20.0 cm. Associated was a single nephrite bead (p. 499).

Jar 15, also badly broken, was on the southeast side of the tree. It had a flat bottom 13 cm. in diameter and a slightly everted, folded-over rim with a mouth diameter of 28 cm., suggesting Piratuba Plain shape 19. The surfaces are smoothed but uneven.

Jar 16, east of jar 15, is attested by a flat base 13 cm. in diameter found upside down 25 cm. below the surface.

Jar 17, 1 meter south of jar 15, had an everted, folded-over rim 30 cm. in mouth diameter. The wall slopes outward to a diameter of 38 cm. at 20 cm. below the rim (Piratuba Plain shape 17?). Since the base is missing, it is possible that jar 16 is part of the same jar. The exterior is extremely uneven and shows many crackle lines.

Jar 18 is incomplete, no rim sherds having been found. It has a flat base 25 cm. in diameter, and a body diameter of 57 cm. at a height of 28 cm.

A large number of miscellaneous sherds were found in the circular area between two root spurs on the east side, which also produced jars 4 and 5. This was called section A, to distinguish it from section B on the south side of the spur, where similar conditions prevailed (fig. 178). The sherds were present to a depth of 25 cm. and represented fragments of a variety of large and small vessels. Those with identifiable shapes were included in the analysis for seriation of the site (fig. 201). Except for these two spots, there was no concentration of sherds that could not be identified as belonging to the burial jars described above.

Only one object of nonceramic nature came from C–4:

Nephrite bead.—A well-polished, cylindrical bead of tan nephrite with a greenish tint and streaks of darker brown was associated with jars 12, 13, and 14. It was 16 mm. long and 9 to 10 mm. in diameter. A hole had been drilled from one end, emerging on the opposite end slightly off center, tapering from 3.5 mm. in diameter to 2.0 mm.

C–6—CROATASAL, SECTION A

Approximately in the center of the habitation site of C–6—Croatasal (pp. 459–460) was a small area of slightly greater natural elevation, which produced a large number of burial jars as well as other sherds. Half of the jar bases were along a north-south axis spaced approximately 1 meter apart; the remainder were up to 4 meters to either side of this line (fig. 180). Sherds from a variety of other vessels were abundant on the surface and to a depth of 20 to 35 cm. in the loose, light-gray soil. Often they were beneath the base of a large burial

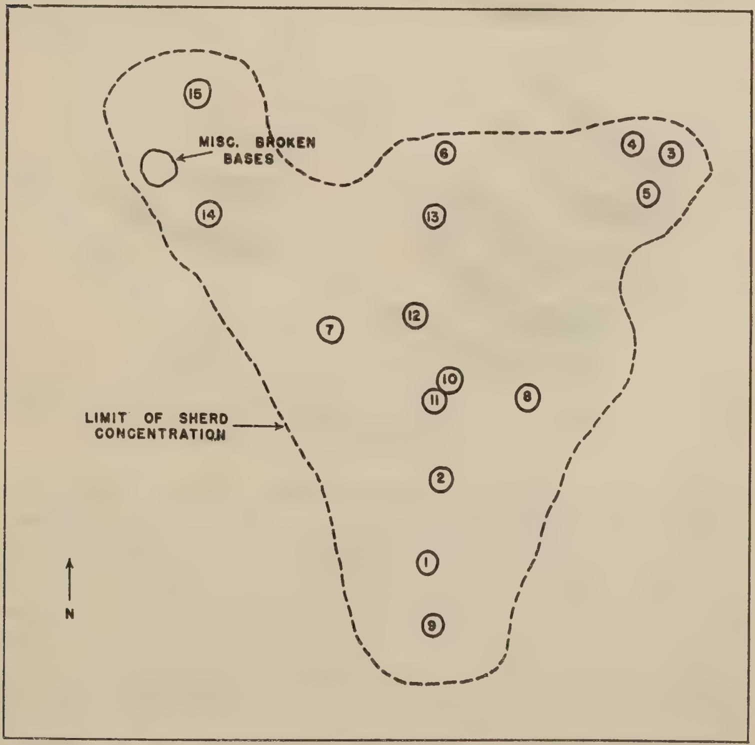


FIGURE 180.—Detailed plan of Section A, the burial area of C–6—Croatasal.

jar, offering evidence that the cemetery belonged to the latter part of the village occupancy, the deaths perhaps being the cause for, or contemporary with, its abandonment. The relative frequency of the vessel shapes represented in this part of the site is shown on the seriation chart (fig. 201).

The bases of 15 burial jars were excavated. Because of the badly broken condition and the numerous other sherds associated, it was impossible to reconstruct any of the vessels. All were Piratuba Plain with coarse sherd temper, the grains up to 8 mm. long. Three distinguishable types of base are represented: (*A*) Flat, joining the walls at a sharp to rounded angle of 45 degrees or more (fig. 181, *A*); (*B*) concave on the exterior with a typically rounded junction to the walls (fig. 181, *B*); and (*C*) flat and rising vertically for 1 to 2 cm. before joining the outsloping walls, producing a slight pedestal (fig. 181, *C*). Details of the jars and circumstances of their discovery are shown in Table T.

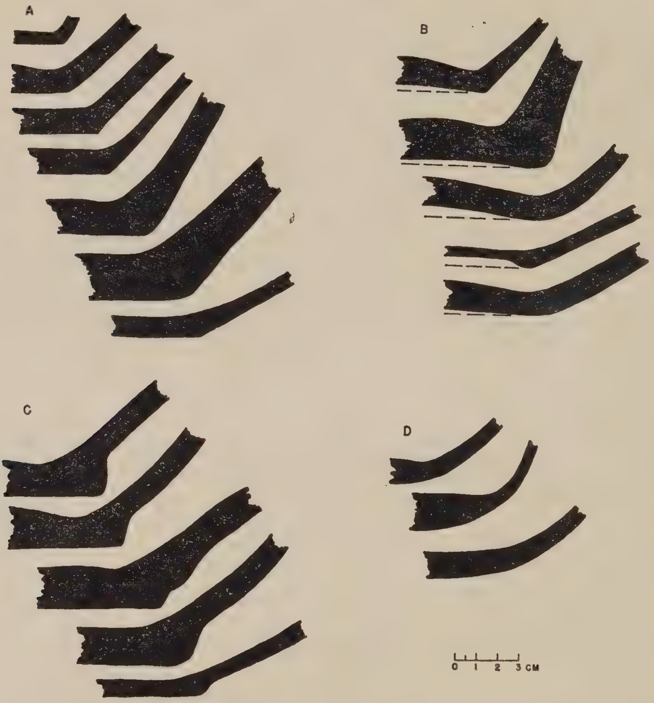


Figure 181.—Base shapes of Piratuba Plain jars, Aruã Phase. *A*, Flat. *B*, Concave. *C*, Pedestal. *D*, Rounded.

TABLE T.—*Base type and dimensions of burial jars from C–6—Croatasal, section A*

Jar	Base type	Base diameter	Body wall thickness	Depth in ground
		Cm.	*Cm.*	
1	B and C	17	1.0	23 cm.
2	B	11	1.0	Surface.
3	A	16	1.0	Surface.
4	B	16	1.1	20 cm.
5	C	14	0.9–1.2	10 cm.
6	(Neck only)			Surface.
7	C	18.5	0.8–1.0	10 cm.
8	C	20	1.0–1.2	Surface.
9	C	18	0.9–1.2	10 cm.
10	B	13	1.1	10 cm.
11	C	20	1.3	12 cm.
12	A	15	1.1	15 cm.
13	C	21	1.5	Surface.
14	C	14–16	0.9	Surface.
15	A	14	1.1	5 cm.

The only jars with unusual features were jar 1, which retained a few fragments of human bone inside, and jar 14, which had anthropomorphic features in the form of two hemispherical projections at one side representing legs on which toes were modeled, and female genitalia (fig. 182). Unfortunately, no fragments of the upper part of this jar could be located.

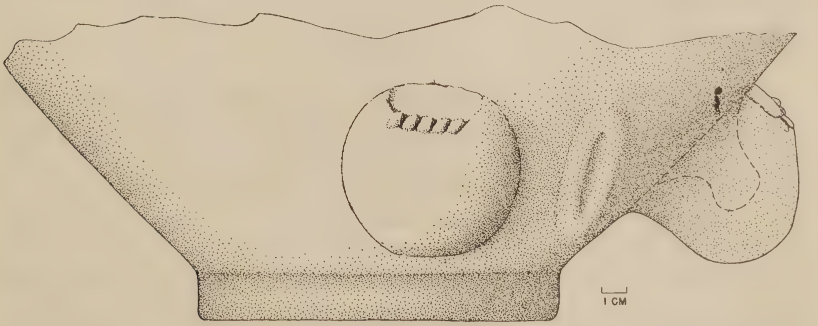


FIGURE 182.—Aruã Phase anthropomorphic burial jar from section A of C–6—Croatasal.

C–6, section A, produced a wealth of sherds with applique decoration, some of which seem to be parts of anthropomorphic vessels. In addition, there was a seven-toed foot (fig. 167, *a*), a crude figurine, and a cube of red ocher.

Pottery figurine (fig. 183, *b*). A very crudely modeled, approximately triangular lump of fired clay, with three rounded points and intervening concave sides, was found near the center of the burial area. One surface is slightly concave, the other convex. It will stand upright only on the edge opposite the largest point. Width at base is 6.3 cm., height 5.8 cm., thickness from front to back 3.5 cm. Identification of its purpose remained uncertain until the excavation of C–12, where the finding of an object of similar shape and size provided with a face

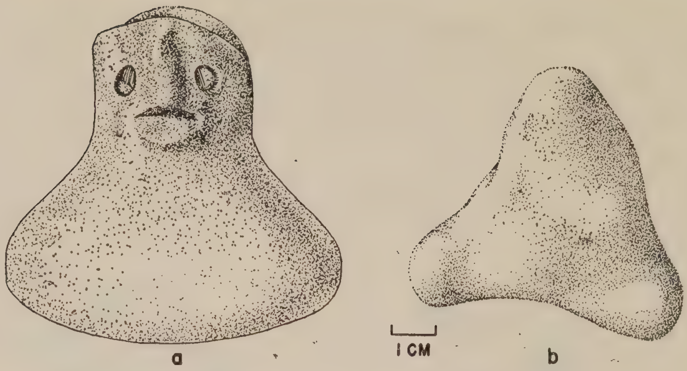


FIGURE 183.—Aruã Phase pottery figurines. *a*, C–12—Condino. *b*, C–6—Croatasal.

(fig. 183, *a*) established it as a figurine. Site C–6 is of somewhat later date than C–12, and the more stylized and simplified figurine appears to be a degeneration from the earlier form represented at C–12.

Red ocher cube.—A small, roughly cubical piece of red ocher with six polished, flat to convex surfaces may have been used to produce the reddish color present on the surface of many sherds. It also could have been used for body painting, since the color is imparted easily if the skin or the cube surface is wet. The surfaces vary from 1.7 by 2.2 cm. to 2.4 by 2.4 cm.

C–9—FREI JOÃO

A short distance north of the upper Rio Apaní, the coastal forest belt gives way to *campo*. Frei João is almost in the center of a large open area, the nearest forest being a finger 300 meters to the west (fig. 151). The site is not differentiated by elevation or vegetation from the surrounding terrain, and the existence at present of a compact 10 to 12 cm. sterile layer over the sherds removes all cultural evidence of its presence. Vegetation includes clumps of tall grass changing to bushes toward the south edge. A few scattered trees grow just outside the site limits.

Although this appears to have been an Aruã urn burial cemetery, the identification is rendered difficult because the contents have suffered from various vicissitudes in recent time. The major destruction was caused by trampling cattle, there once having been a corral on the spot, according to the present administrator of the *fazenda*. It was visited by Nimuendajú in 1923 but not excavated owing to hard ground (p. 521). Later, part of the site was excavated by a priest, after whom it is now called "Frei João."

The limits of the site are difficult to determine from the surface examination. Sherds are sometimes revealed in the cracks of the parched earth (visited during the dry season), and from this evidence it appears to have occupied a roughly circular area about 20 meters in diameter. Excavation was concentrated in a 5- by 3-meter test between the center and the east edge. The bases of numerous large jars were associated with an abundance of large sherds, stone axes, and nephrite ornaments. Description of the four jars excavated will illustrate the burial pattern:

Jar A is represented by a flat base (fig. 181, type A) resting upright 15 cm. below the surface. Base diameter was 26 cm., existing height 7 cm. where the diameter had increased to 36 cm., base thickness 2 cm., body wall thickness 1.5 cm. Fragments of bone appeared in the ground on the east where the wall had been broken away. Further digging there produced a large stone ax (ax 1; fig. 184, *a*) and other body sherds from the jar at a depth of 25 cm.

Jar B is another base fragment found 3 meters southwest of jar A and 15 cm. below the surface. The existing fragment is in no way unusual, having a smoothed interior but a somewhat uneven exterior surface and a base that is slightly concave on the exterior with a corresponding convexity on the interior (fig. 181, type B). Associated with it were a small stone ax (ax 2; fig. 185, *c*) and four nephrite ornaments (pp. 507–508; fig. 188).

Jar C represents the lower third of a large round-bottomed jar (fig. 181, type D), which was resting 20 cm. below the surface and leaning to the northeast. Although it had been shattered into small pieces, the hard, surrounding earth held it in shape. At the maximum existing height of 27 cm., the body diameter was 45 cm. A small stone ax (ax 3; fig. 185, *d*) was found 24 cm. to the southwest. Also associated were fragments of two of the flat-topped bowls (Piratuba Plain shape 8) with delicate relief decoration (fig. 186, *a*, *b*), and miscellaneous sherds.

Jar D was adjacent to jar C on the north side. Excavation revealed it to be a large, hollow-rimmed bowl 42 cm. in diameter (Piratuba Plain shape 10), upside down and broken into large pieces. Since no jar sherds were associated, this may belong with jar C as a lid. Fragments of a large, badly shattered, but restorable stone ax (ax 4; fig. 184, *b*) were lying on and by the south edge of the bowl. A smaller, complete specimen (ax 5; fig. 185, *b*) was a little northwest of the first. Above the hollow-rimmed bowl were many sherds of different bowls, mostly representing shapes 2, 6, and 7.

Nonceramic artifacts encountered in the excavation of C–9 included stone axes, nephrite objects, and red ocher.

Stone axes.—Seven axes of polished diorite were recovered from the relatively small area excavated. Of these, 5 were associated with the burials just described and 2 were isolated.

Ax 1 (fig. 184, *a*), associated with jar A, is made of coarse-grained, greenish-gray diorite with dark-brown flecks. The butt retains pecking marks, as does the slight groove along the sides. By contrast, the blade end is well polished and the convex cutting edge sharp. Length is 13.5 cm., width at blade 6 cm., at butt 3.8 cm., thickness at center 5 cm.

Ax 2 (fig. 185, *c*), found with jar B, is of fine-grained, light gray-green diorite with streaks of brown and white. It is somewhat asymmetrical, but well polished, especially toward the slightly convex blade. Fracture lines are not completely erased at the butt end, which is rounded and shows no signs of having been used for hammering. Length is 6.4 cm., width at blade 4.5 cm., width at butt 3.2 cm., thickness 2.1 cm.

Ax 3 (fig. 185, *d*), associated with jar C, is of fine-grained, light gray diorite, and is trianguloid in outline, narrowing from 6.4 cm. at the blade to 2 cm. at the

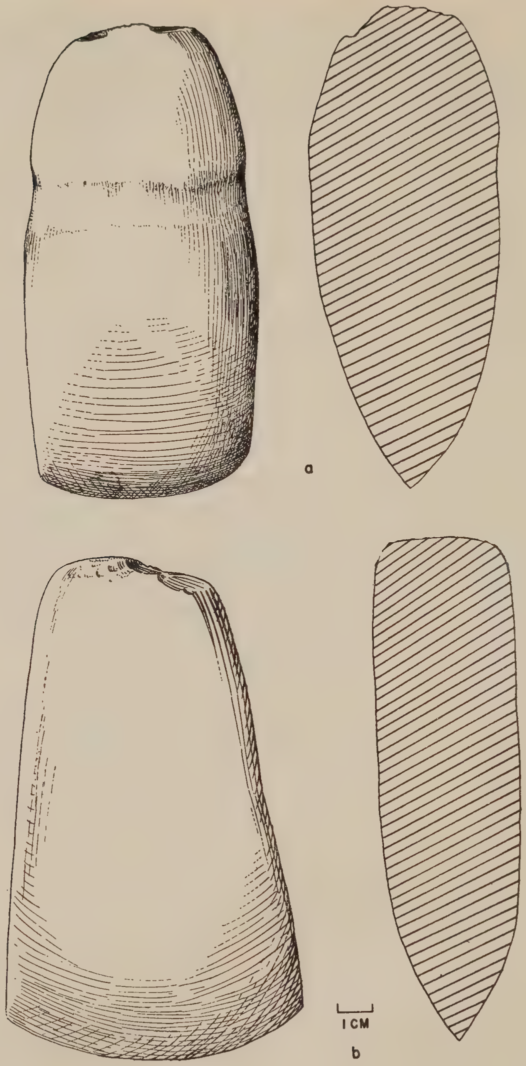


Figure 184.—Aruã Phase stone axes from C-9—Frei João. *a*, Ax 1. *b*, Ax 4.

butt, which shows concoidal cleavage in various planes, probably from use as a hammerstone. The remaining surfaces are polished, but a slight indentation toward the center of one edge was not obliterated. The convex blade is well polished and sharp. Thickness is 2.8 cm., except where it tapers to the point. Length is 8.5 cm.

Ax 4 (fig. 184, *b*), associated with jar D, is of fine-grained, light gray diorite, well polished on all surfaces except the butt, which showed evidence of use as a hammer. The convex cutting edge is sharp, and the general outline symmetrical.

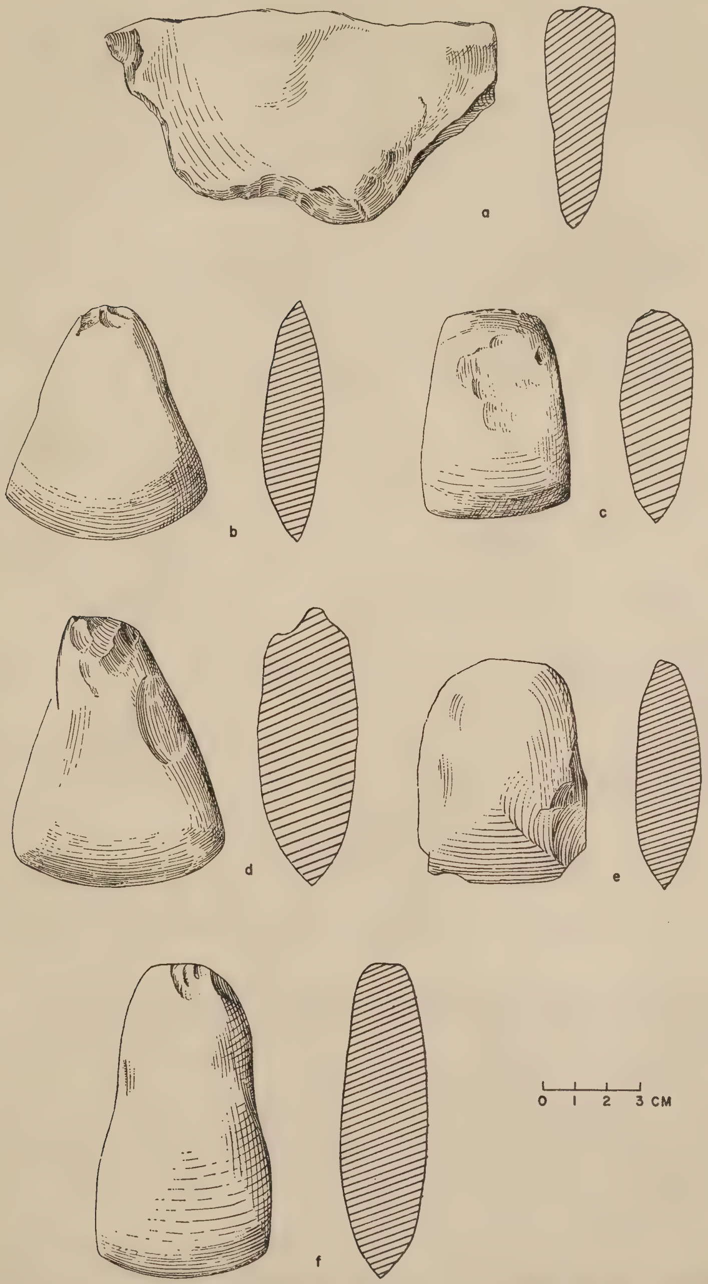


FIGURE 185.—Aruã Phase stone artifacts from C–9—Frei João. *a*, Asymmetrical stone tool. *b*, Ax 5. *c*, Ax 2. *d*, Ax 3. *e*, Ax 7. *f*, Ax 6.

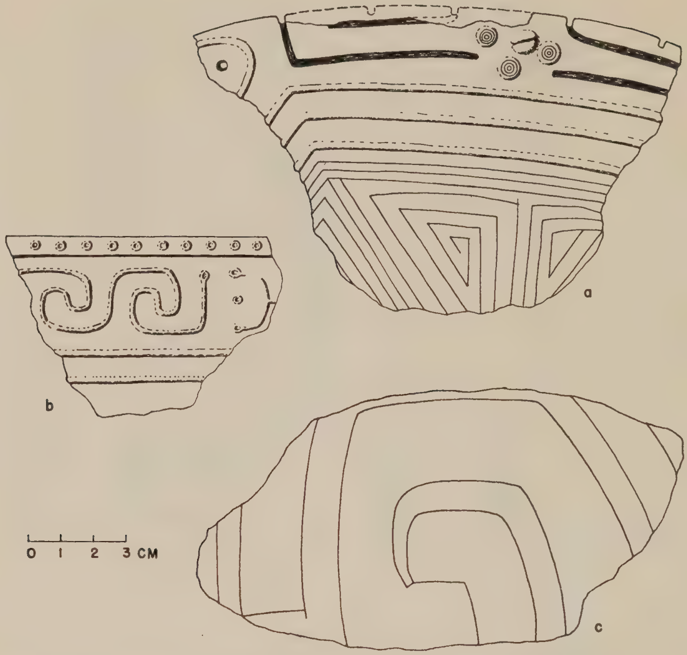


FIGURE 186.—Aruã Phase decorated sherds from C–9—Frei João. *a*, Modeled and incised. *b*, Modeled. *c*, Incised.

Length is 14.3 cm., width tapering from 8.8 cm. at the blade to 4.5 cm., at the flat butt, thickness 3.8 cm. for two-thirds of the distance from the butt, where it began to taper toward the blade.

Ax 5 (fig. 185, *b*) of fine-grained, light-gray diorite is smooth and well polished on the blade. The remainder of the surface is irregular, although lightly polished, and the butt shows use as a hammer. Length is 7.3 cm., outline trianguloid, tapering from 6.2 cm. at the convex blade to 1.8 cm. at the butt. Thickness is 1.7 cm. just above the blade tapering toward the butt. This also was found near jar D.

Ax 6 (fig. 185, *f*), made of fine-grained, gray diorite, is incompletely polished so that the lines of concoidal fracture are not erased. Pecking at the center of both sides forms a slight indentation or waist. It measures 9.8 cm. long, 5.5 cm.wide at the convex blade and 2.3 cm. wide at the butt, with the thickness decreasing from 2.5 cm. above the blade to 1.2 cm. at the butt.

Ax 7 (fig. 185, *e*) is a rectanguloid ax of fine-grained, gray diorite, only slightly polished on all surfaces. The blade is badly chipped at both corners from hard use, and the butt is chipped in concoidal fracture from use as a hammerstone. The length is 7.0 cm., width 5.3 cm., and thickness 1.8 cm. at the center, narrowing to a point at both blade and butt ends.

One of the miscellaneous sherds scattered throughout the site is from a bowl of Piratuba Plain shape 10 with the modeled figure of a bird perched on the hollow rim:

Hollow rimmed bowl (fig. 187).—A large rim sherd bears a modeled, hollow adorno in the form of a bird with a round head 3.8 cm. in diameter bearing two large, ringlike eyes 1.5 cm. in diameter and a small, conical-based beak battered on the end. This is set on a hunched body. The convex edges of the wings are modeled on the front, with a narrow mark running vertically between them down the breast. The figure is simply but effectively done, and strongly suggests an owl. It is fastened to the outer edge of the hollow rim, so that it leans backward but faces the interior of the bowl, which had a mouth diameter of about 16 cm.

Asymmetrical stone tool (fig. 185, *a*).—This piece of biotitic granite with a naturally flat, D-shape, was probably used as a hammerstone or chopper. It has a rough, scalloped edge as a result of use. The tool measures 12.4 cm. long, 6.0 to 7.0 cm. wide and decreases in thickness from 2.2 cm. on the flat edge to 0.3 cm. on the other edges.

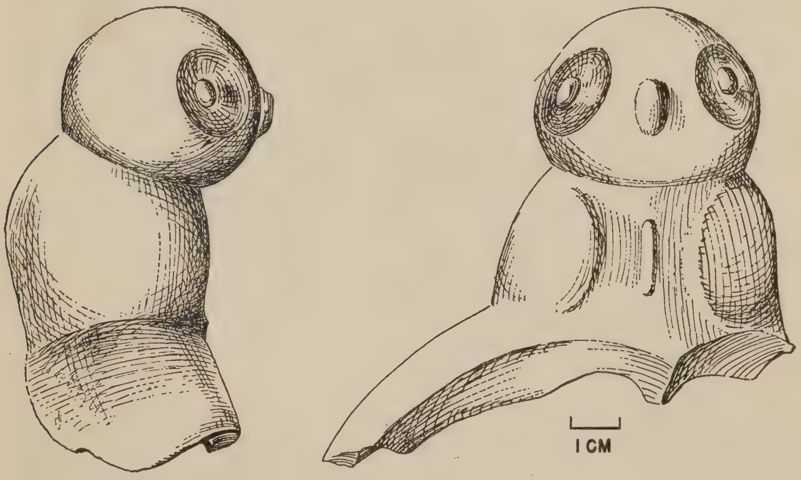


FIGURE 187.—Aruã Phase zoomorphic rim adorno in the form of a bird from C–9—Frei João.

Nephrite objects.—Of the 5 nephrite objects from C–9—Frei João, the first four were associated with burial jar B, while the fifth had no associated material. The detailed descriptions follow:

Pendant A (fig. 188, *a*) is a flat, rectanguloid pendantlike object of well-polished, pale-green nephrite. One end is carved in the form of a realistically modeled bird's head with a heavy, down-curved beak, which probably represents the vulture. The skull is rounded slightly and is separated from the body by a narrow V-shaped indentation from both sides to form a neck. The body is a parallel-sided rectangle, except where the lower edge tapers toward the back. A biconically drilled perforation, 2 mm. in diameter at the surface and 1 mm. in diameter at the center, has been made 3 mm. from the front edge of the body. Length 3.4 cm., width 1.75 cm. on the body, and 1.4 cm. at the head, thickness 3.0 to 3.5 mm.

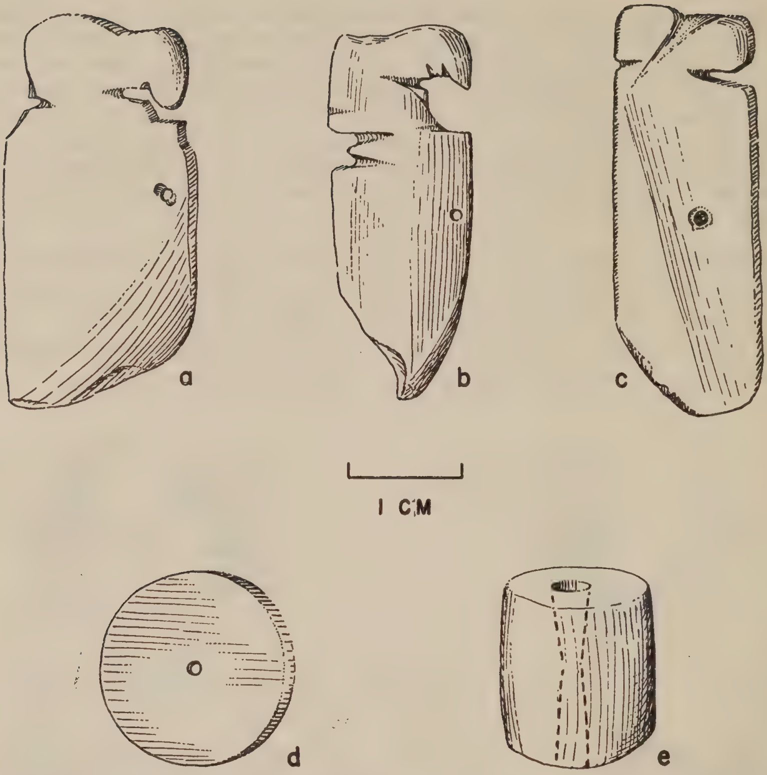


FIGURE 188.—Aruã Phase nephrite pendants and beads from C–9—Frei João.

Pendant B (fig. 188, *b*) is a flat, rectanguloid pendantlike object of well-polished, pale-green nephrite in the outline of a square-headed bird. The beak is hooked, neck long, and the body is more birdlike than the other two, tapering from both front and back toward a backward-turned, rounded tip. The perforation is drilled in the front edge of the body from one side only, giving it a conical form with a diameter of 2 mm. at its entrance and 1 mm. at the exit. Length 3.5 cm., maximum width 1.3 cm., thickness 2.5 to 3.0 mm.

Pendant C (fig. 188, *c*) is a flat, rectanguloid pendantlike object of well-polished, pale-green nephrite with the crude head of a bird at the upper end. The head is rounded and the heavy beak projects forward, but is not hooked. V-shaped indentations separate it from the rectanguloid body, which has the lower, back corner cut off. A biconical hole, 2 mm. in diameter on the surface and 1.5 mm. at the center was drilled near the center of the body. Length 3.5 cm., width 1.2 cm., thickness 3 to 5 mm.

Bead D (fig. 188, *d*) is a flat disk of brownish-green nephrite, 1.7 cm. in diameter and 2.0 to 2.5 mm. thick. A biconically drilled hole in the center narrows from 1.5 mm. in diameter at the surface to 0.5 mm. toward the center. The surfaces are flat and parallel, one being well polished and the other rough.

Bead E (fig. 188, *e*) is of pale-green nephrite with a cylindrical form measuring 1.5 cm. long and 1.3 cm. in diameter. The ends are flat and have parallel surfaces.

All surfaces are well polished. The hole is biconically drilled and narrows from a diameter of 4 mm. at the surface to 2 mm. in the center.

Five lumps of ocher, including one red, two yellow, and two red and yellow, were recovered from various places in the excavations.

Ocher.—One red and yellow, and one yellow fragment are small, irregularly shaped concretions showing no evidence of use. The largest piece, a red and yellow colored fragment, is slightly rubbed on one surface only; it measures 4.5 by 4.0 by 4.0 cm. The lump of red ocher has the form of a flat-based (4.2 by 3.0 cm.), flat-sided cone, with three of the faces polished from rubbing. A yellow piece is long and thin with the upper and lower surfaces stepped and showing scratches made with a fine-pointed tool on the largest flat area. The overall length is 5.0 cm., width 3.4 cm., and thickness 1.5 cm. tapering to only 1 mm.

C–11—VAQUEJADOR DE SÃO SEBASTEÃO

A narrow strip of forest runs east-west across the center of Caviana, separating the *campo* into two parts (fig. 151). In 1908, a path was cleared so that cattle could be driven from one *campo* to the other, and a small Aruã cemetery was discovered on the east edge about 1.5 km. in from the south *campo*. Our guide asserted that the jars were unbroken then, but if this is true the thousands of cattle that have passed through the path during the years since have reduced them to an exceedingly fragmentary condition.

The cemetery is 4 to 5 meters in diameter, and occupies a slight rise, 25 to 30 cm. above the surrounding area. The soil is loose, fine, and light gray, becoming more compact and light tan below the sherd layer. The surface root mat, 5 to 10 cm. thick, covered the refuse deposit, which was 45 cm. thick at the center of the site, decreasing to 25 cm. at the edges. Vegetation on the site included a small tree, 25 cm. in diameter, near the northwest edge, spiny reeds and small brush. The major concentration of sherds was around the tree and petered off to the south and east. Excavation included a thorough testing of the northern half of the cemetery, with a smaller test toward the south edge (fig. 189). The bases of 15 burial jars were recovered, together with numerous sherds and associated material. Unfortunately, the majority of the vessels were too fragmentary for reconstruction. They all represent Piratuba Plain; their descriptions follow:

Jar 1 (fig. 179, *f*), near the northwestern edge of the site, is represented by one-third of the rim and neck, which were projecting upright 8 cm. above the ground, and by large fragments of the body and base in the nearby soil. The jar has a concave bottom 20 cm. in diameter, walls rising to a slight, rounded shoulder, a concave-sided neck, and a folded-over rim (Piratuba Plain shape 17). The surface is not well smoothed, and undulations reveal where the 5-cm.-wide coils were joined. Rim diameter is 40 cm., reconstructed height, 64 cm.; neck height, 14 cm.

Jar 2, one meter east of jar 1, is indicated by several body sherds from a large jar with an applique rib at the junction of the body with the vertical neck. Dia-

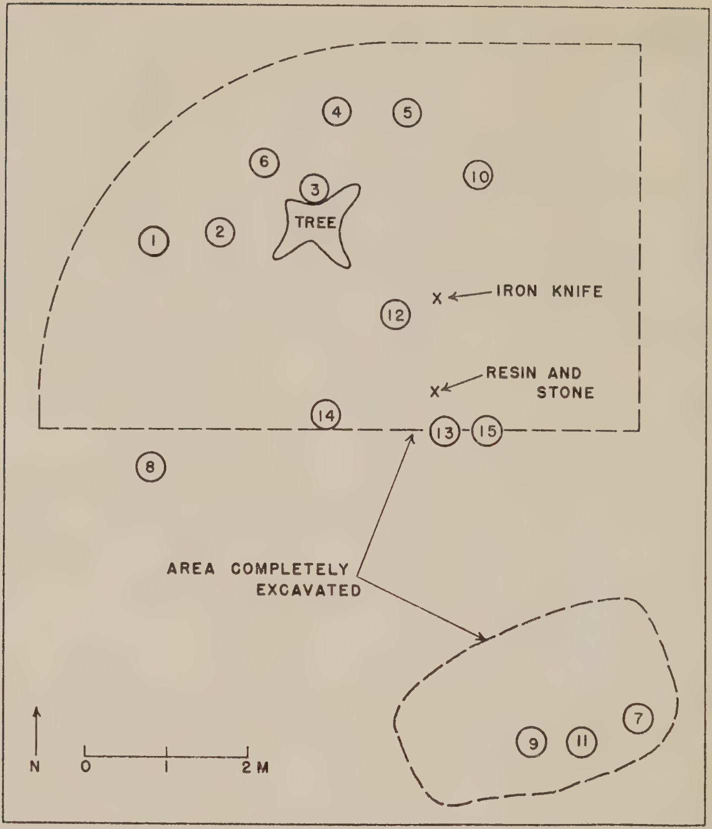


FIGURE 189.—Plan of C–11—Vaquejador de São Sebasteão, an Aruã Phase cemetery site.

meter here is 28 cm., with the globular body estimated at 36 to 38 cm. in diameter. Body wall thickness is 1.1 cm. The applique rib is 9 mm. thick and 8 mm. wide and is decorated with vertical notches, 1.0 to 1.5 cm. apart. No associated rim sherds could be identified.

Jar 3 designates a crude and irregular fragment of a base, 12.5 cm. in diameter, found upright against the north side of the tree and partly under the roots. It is slightly convex on the exterior of the bottom and joins the walls after a vertical rise of 5 mm. that produces a pedestal effect (fig. 181, base type C). Toward the upper interior, the coil junctions are only partially obliterated. Inside were several sherds, including parts of a small globular vessel with a rim diameter of 12 cm. and of a deep bowl with irregular, prominent, unsmoothed coils on the interior, and three small, applique nubbins projecting from the exterior of the rim, which had a diameter of 18 cm.

Jar 4 (fig. 179, *g*) was indicated on the surface by part of the base projecting 16 cm. above ground. Digging toward the northwest, the direction in which the first fragment was leaning, revealed 2 small stone axes lying side by side and a bowl containing 2 pottery beads (pl. 100, *b*). The bowl was 30 cm. northwest of the center of the base of the main jar. As reconstructed, the jar has a small, rounded bottom from which the walls expanded gradually to the rounded shoulder, a short vertical neck and a slightly everted, folded-over rim (Piratuba Plain shape 17). Neck height is 8 cm., rim diameter 30 cm., and reconstructed total height 43 cm. Both surfaces were poorly smoothed, remaining irregular and uneven. The bowl (fig. 190) that had apparently been inside it has a folded-over rim, 19.5 cm. in mouth diameter, nearly vertical sides, and a convex bottom from which project a series of hook-shaped "feet" arranged in a circle 5 cm. outward from the center of the base. Broken edges indicate that two similar feet occupied the center of the base. They are relatively equally spaced and numbered 10 originally. In addition, a row of small, conical appliques follows the lower edge of the junction of the wall with the base. These project 1.5 cm. from the vessel surface and are set, on the average, 1.5 cm. apart except where gaps of 4 cm. separate them into 2 groups, one of 7 and the other of 6 nubbins.

Jar 5, 1 meter east of jar 4, was represented by a base sherd 8 cm. below the surface, with one moss-covered edge protruding. It is exceedingly crude, 19 cm. in diameter, with a rounded junction to the body wall at one side and a 2 cm. high pedestal type junction on the opposite side. Wall thickness is 5 to 7 mm., and none of the other sherds encountered in the vicinity are thin enough to have belonged to the upper part. Inside was a large sherd from a deep bowl with a direct rim, ornamented on the exterior of the body with two undulating applique ribs, 0.8 to 1.1 cm. thick.

Jar 6 fragments came from midway between jars 2 and 4. This location produced a flat, pedestal-type base (fig. 181, *C*) 30 cm. in diameter and large sherds from two jar necks. The one that seems most likely to belong to the base is part of a rounded shoulder and vertical neck 32 cm. in diameter, with the rim missing. The second sherd is from a large, globular-bodied jar with a constricted mouth and upturned, direct rim 42 cm. in diameter (Piratuba Plain shape 20).

Jar 7 had been demolished to such an extent that only a large base lying on the surface remained. The exterior is slightly concave and the edges join the body wall at an angle of 75 degrees (fig. 181, type *B*). Base diameter is 30 cm., existing height 13 cm., at which the body diameter is 38 cm., base thickness 2.2 cm., body wall thickness 1.4 cm. The exterior surface is better smoothed than the interior.

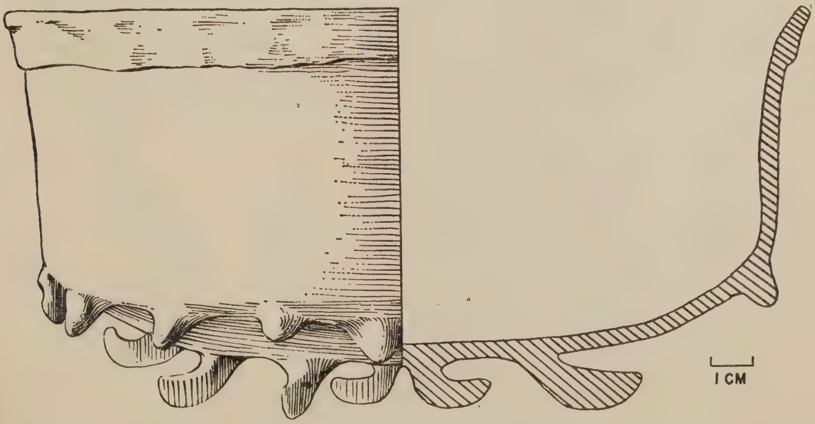


FIGURE 190.—Piratuba Plain bowl associated with Burial jar 4 from the Aruã Phase site C–11—Vaquejador de São Sebasteão.

Jar 8, another base, was 24 cm. below the surface. It is flat (fig. 181, type A), 20 cm. in diameter, with an existing height of 20 cm. at which the diameter is 40 cm.

Jar 9 was indicated by a base upside down 18 cm. below the surface. It is flat, 16 cm. in diameter, joining the body wall at a rounded angle (fig. 181, type A).

Jar 10 is a rim sherd from a large rounded bowl (Piratuba Plain shape 3) lying on the surface. The rim, 34 cm. in diameter, bears two narrow, overlapping, unsmoothed coils on the exterior, which provide a pair of irregular, parallel decorative lines. No jars were found in the immediate vicinity.

Jar 11 is a pedestal-type base (fig. 181, type C), 16 cm. in diameter and 2 cm. thick at the center. Both surfaces are somewhat irregular, although the exterior is better smoothed than the interior.

Jar 12 has a flat base with a suggestion of a poorly defined pedestal, an insloping neck and a slightly everted, folded-over rim bearing thumb impressions along the lower edge (Piratuba Plain shape 17). The base was upright 18 cm. below the surface. Base diameter is 16 cm., rim diameter 26 cm., thickness at the center of the base 2.5 cm., body wall thickness 1.3 to 1.5 cm. Associated with this jar was a large fragment of the base and body of a vessel built up of overlapping coils that were smoothed on the interior but left to form a tiered profile on the exterior (fig. 191). Body sherds were scattered as far away as jar 3. The bottom is flat on the exterior and convex on the interior, with a diameter of 18 to 20 cm. The coils are both closer together and more prominent at the bottom, increasing from 2.5 to 6.0 cm. apart from the lower edge of one tier to the lower edge of the next (proceeding from bottom to top), and decreasing from 1.2 to 0.8 cm. in projection from adjacent surface below. Enough sherds were recovered to recon-

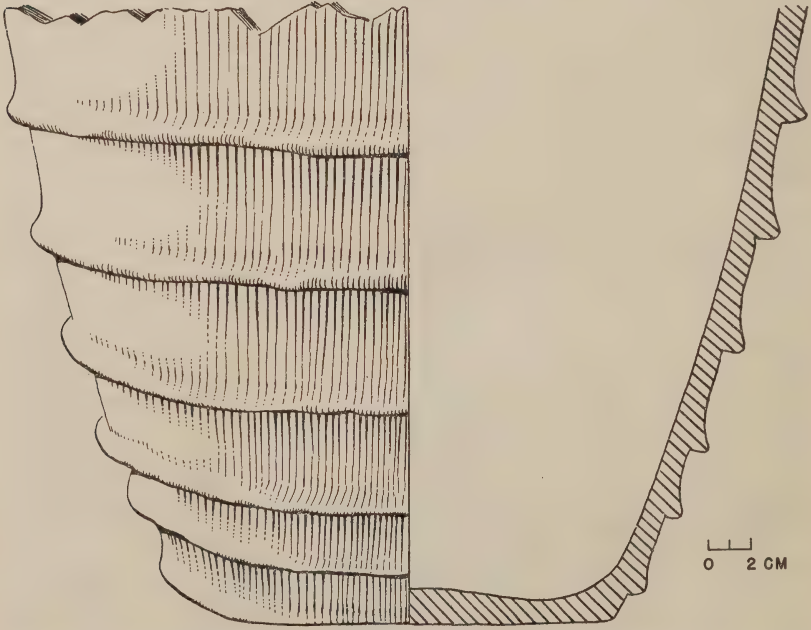


FIGURE 191.—Tiered jar of Piratuba Plain associated with Burial jar 12 from the Aruã Phase site of C–11—Vaquejador de São Sebasteão.

struct the height to 31 cm., which represents seven tiers. At this height the body diameter is 40 cm. Only one rim sherd was found that might belong to the jar. It is a folded-over rim, slightly everted, with a mouth diameter of 48 cm.

Jar 13 is a large base fragment, the upper edge of which was protruding 6 cm. above the ground surface. It is the pedestal type (fig. 181, type C), 26 cm. in diameter, with coil lines clearly distinguishable on the bottom and in cross section showing the steps in construction. The first coil of the wall was added around the edge of a disk, which forms the center of the base. Then two smaller coils were added outside of the wall to form the projecting pedestal; as a result, the thickness of the wall at that point reaches 4.6 cm. Both surfaces are very crude, uneven, and irregular.

Jar 14 is another base, encountered 18 cm. below the surface. It has a flat bottom, rounded pedestal 1.5 cm. high and widely flaring side walls (fig. 181, type C). Base diameter is 20 cm., height of the existing fragment 13 cm., at which the diameter has increased to 45 cm.

Jar 15, the lower part of a small jar, was upright with the upper edge protruding 7 cm. above the surface and covered with moss. The flat bottom is 12 cm. in diameter, the rounded and poorly defined pedestal 9 cm. high (fig. 181, type C). The maximum diameter of the rounded body, 11 cm. above the base, is 24 cm.; body wall thickness 0.9 to 1.2 cm.

A quantity of miscellaneous sherds from Piratuba Plain bowls and jars of various sizes and shapes was encountered scattered about in the dirt. The relative frequency of the rim and vessel shapes can be seen on figure 201. Noteworthy were a sherd from a platter or griddle (Piratuba Plain shape 11) with an upturned border bearing a row of impressed rings, and a body sherd from a large jar decorated at the base of the neck with an applique rib bearing vertical nicks approximately 1 cm. apart.

Other artifacts from C–11 include:

Pottery beads.—Associated with jar 4 were two roughly circular pottery objects, pierced slightly off-center, that may be crude beads or spindle whorls. The larger (fig. 192, *b*) has a diameter of approximately 4 cm., a thickness of 1.8 cm., narrowing toward the rounded edges, and a perforation 3 mm. in diameter. The second (fig. 192, *a*) is of similar shape, but smaller, measuring 3.4 cm. in diameter, 1.4

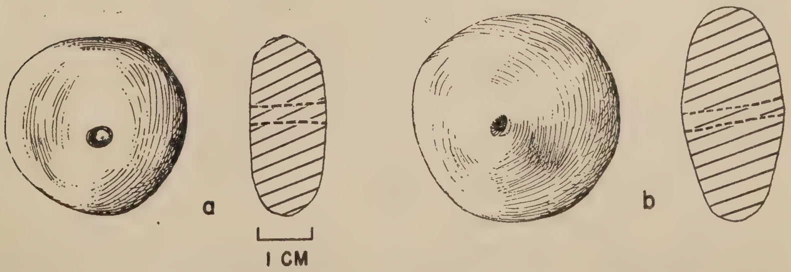


FIGURE 192.—Aruã Phase pottery beads associated with Burial jar 4, C–11—Vaquejador de São Sebasteão.

cm. thick, and pierced in the same way, by pushing a stick through the clay while still wet. The surfaces are smoothed, but not well enough to produce evenness or symmetry.

Stone axes.—Two axes of almost identical shape and size were associated with jar 4.

Ax 1 (fig. 193, *b*) of fine-grained tannish diorite, worked by pecking and then polishing the surfaces smooth. Pecking marks are still visible just above the well ground, convex bit; the butt is flattened, but shows no use as a hammerstone. Length 7.2 cm., width 5.2 cm. at the blade, 1.5 cm. at the butt, thickness 3.3 cm.

Ax 2 (fig. 193, *a*) of fine-grained, tan diorite worked by pecking and then polishing; pecking still visible on the butt end, which shows slight use as a hammerstone. The convex bit is well polished and sharp. Length 7.1 cm., 4.4 cm. wide at bit, 2 cm. wide at butt. Thickness varies from 2.4 cm. just above the bit to 3 cm. in the center of the poll.

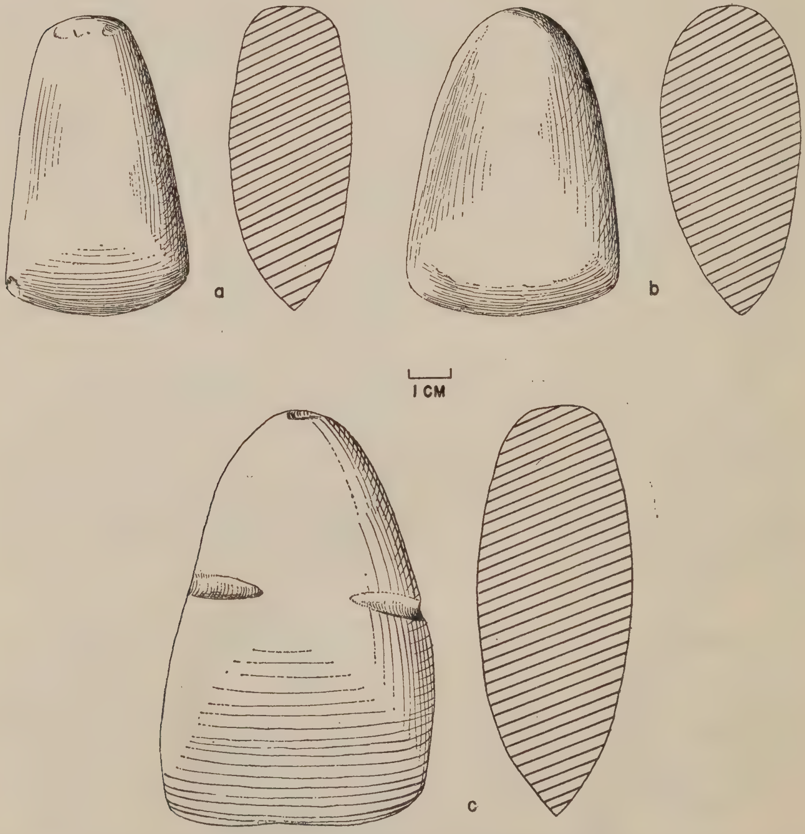


Figure 193.—Stone axes of the Aruã Phase. *a–b*, Associated with Burial jar 4, C–11—Vaquejador de São Sebasteão. *c*, Associated with jar 8, C–12—Condino.

Polishing stone.—A cuboidal stone of fine-grained diorite with gray flecks and tan spots has several well-smoothed surfaces that indicate use involving friction. It measures 3.0 by 3.2 by 2.9 cm.

Jutahi resin.—An irregularly shaped lump of clear, amber-colored, white-coated resin was found with the polishing stone, 15 cm. below the surface. It is 3.5 by 2.0 by 2.0 cm.

Iron concretion.—This somewhat rounded but irregular concretion of iron, 3.5 by 3.0 by 1.5 cm., possibly represents a natural inclusion in the soil. It shows no trace of use.

Iron knife blade.—The rusted blade of a small knife was found a little north of the center of the site just below the surface. It includes the blade (11.5 cm. long) and a portion of the tang that fit between the two sections of a wooden or bone handle, with two perforations for attachment. The cutting edge is convex, the back straight; maximum width of the blade is 2.2 cm., thickness 1 mm. at the edge, 3 mm. at the back. Although oxidized, the iron is still strong and all features of the implement are clearly discernible. It is not possible to determine conclusively whether this is an article of trade with the Aruã or whether it is a relic of the construction of the cattle trail. This cemetery seriates above M–5, which had contact materials, and thus the knife would not be out of place; its condition seems too good, however, to be consistent with several hundred years' exposure to the elements.

C–12—CONDINO

Another Aruã cemetery is located about 500 meters north of C–11 and 250 meters east of the cattle trail (fig. 151). It has been discovered by our guide about 20 years previously while hunting and he contended that at that time the jars were whole and standing on the surface. At the time of our visit they were badly broken, with fragments buried to a depth of 20 cm. The bases of the large jars were arranged in an oval 10- by 5-meter area (fig. 194). The soil was light tan, loose, and somewhat sandy, and was not distinguishable in character or elevation from that of the surrounding area. Three or four small trees grew toward the edge of the site, and there was a sprinkling of cane, spiny palm, and small brush.

Nine concentrations of sherds, generally including the base of a large burial jar, were scattered in the site area. The sherds were dispersed over small patches typically 0.50 to 1.50 meters in diameter, with the spaces between them sterile. The associations were as follows:

Jar 1 (fig. 179, *h*), at the southwest limit of the cemetery, was visible as an 8 cm. projection of a broken edge above the ground. Excavation revealed the lower half of a large jar, intact, leaning slightly to the west, with its base resting 23 cm. below the surface. The base, 18 cm. in diameter, had a low, rounded pedestal (fig. 181, *C*); sidewalls flared outward, then curving inward to form a

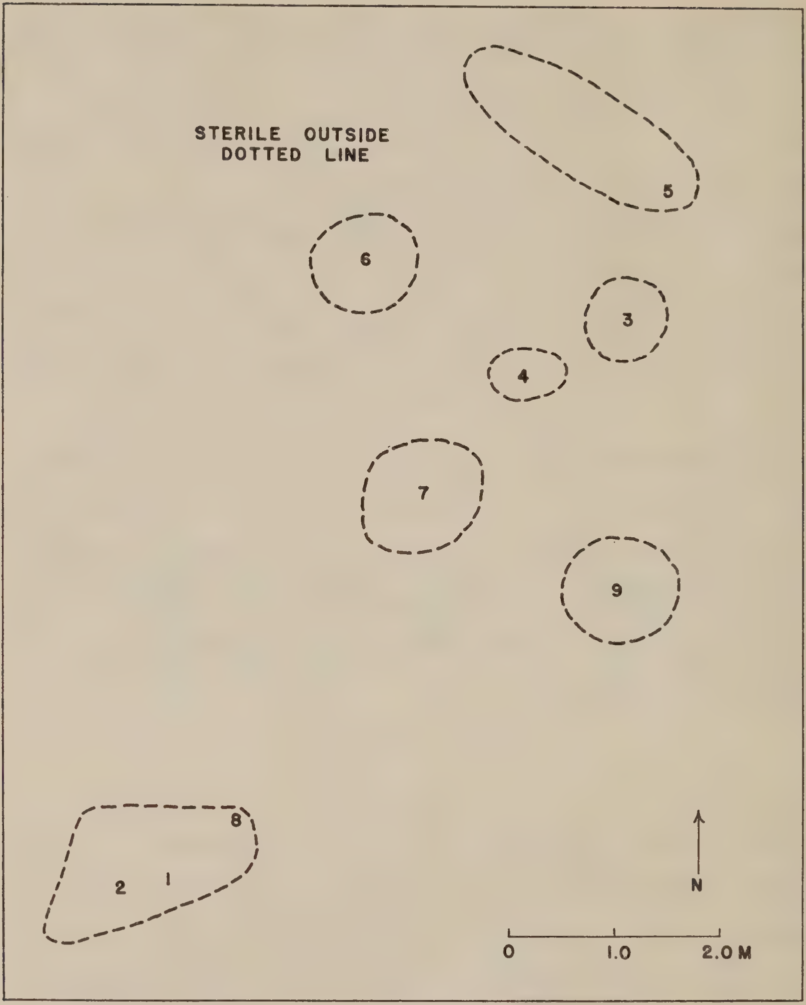


FIGURE 194.—Plan of C–12—Condino, a cemetery site of the Aruã Phase, showing the location of the burial jars.

pronounced shoulder at a height of 28 cm., and then sloping to a vertical neck and everted rim with a mouth diameter of 36 cm. (Piratuba Plain shape 16?); maximum body diameter 46 cm.

Jar 2A (fig. 179, *i*), the lower part of a very large jar, was 1.5 cm. west of and leaning slightly toward jar 1. Inside it, with bottom inside bottom, and body sherds along the walls, were fragments of a second vessel, jar 2B. Sherds from both jars and from several bowls were encountered in the surrounding dirt. The close association between this and jar 1 makes it probable that the two vessels represent a compound burial. Jar 2A had a small, slightly convex base (fig. 181, type B), a large ovoid body and everted, exteriorly thickened rim (Piratuba Plain shape 15). An applique rib 1.5 to 2.0 cm. wide and 1.2 to 1.5 cm. high ran around the body just above the maximum diameter. The upper surface was ornamented with large thumb or fingertip impressions 3 to 7 mm. deep, and averaging 5 mm. apart (pl. 108, *g-h*) Maximum body diameter was about 48 cm., rim diameter 54 cm., reconstructed height 61 cm. Jar 2B had a pedestal-type base 16 cm. in diameter (fig. 181, type C), from which the walls rise at an angle of 45 degrees. The only rim sherd that could belong to this jar is one with an outflaring, direct rim 40 cm. in diameter. This may be a misidentification, since no other jar with this sort of rim was encountered at any other Aruã site.

Jar 3 (fig. 179, *j*) was signaled by a moss-covered broken edge protruding above the ground. The bottom of the jar was intact except for the broken out base and rested 23 cm. below the surface. A flat-bottomed, mildly carinated bowl (Piratuba Plain shape 2) with a flat-topped, horizontal rim 30 cm. in diameter and a base 22 cm. in diameter was resting right-side-up over the hole in the jar bottom. Rim sherds from four other vessels were also inside. The jar had a large rounded body, 62 cm. in maximum diameter, a short, almost vertical neck, 15 cm. high, and a slightly everted, exteriorly thickened rim with a square lip, and a mouth diameter of 40 cm. (Piratuba Plain shape 15). An applique rib, 1 cm. high and 1 cm. wide, ran around the shoulder at the body diameter of 54 cm. Its upper edge bore a row of impressed rings 1 cm. in diameter and 3 to 8 mm. apart (pl. 108, *i*).

Jar 4, 50 cm. southwest of jar 3, also had the edge of a fragment projecting above the surface. Digging beside this fragment uncovered a small, crude bowl (A). Next to it, a second bowl (B) was inverted over a smaller jar (C). Examination of what was thought to be the main jar revealed it to be instead a flat, thick platter or griddle (Piratuba Plain shape 11) with the impression of a thick-ribbed leaf on the underside and an upturned rim with a row of circles impressed with a solid stick along the inner edge (fig. 195; Meggers and Evans, 1954, pl. 3). Diameter is 30 cm. Although the thickness is 1.5 to 2.0 cm., the impression of the main rib of the leaf to a depth of 1.3 cm. where the wall thickness was only 1.6 cm. made the platter weak and fragile. The small associated vessels are all exceedingly crude. Bowl A has a flat bottom 8 cm. in diameter rounding out to vertical or bulging sides ending in a folded-over rim. The rim is not level, so that the vessel height varies from 7.3 to 8.4 cm. Mouth diameter is 12 cm. Bowl B (pl. 105, *d*) has a flat bottom 9 cm. in diameter, walls curving outward and then inward to a constricted mouth with a direct rim and rounded lip. Except that the rim is not level, the symmetry is good. Height 7.5 cm., maximum diameter 14 cm., mouth diameter 12 cm. Jar C (pl. 105, *e*) has a flat bottom, walls outcurving to a diameter of 10.4 cm., then incurving before flaring outward to the rim, which varies from direct to folded over and has a diameter of 9.3 cm. The base, 6 cm. in diameter, is flattened so badly to one side that the rim is slanted and height varies from 4.5 to 5.5 cm.

Jar 5 is represented by several rim sherds found scattered over a wide area. Two were with jar 3, and although the fragments differ somewhat in degree of eversion and mouth diameter, there is a possibility that all the rims belonged to jar 3. This would explain the fact that no body sherds were found for jar 5. A large neck sherd bearing an undecorated applique rib from location 5, however, belongs indisputably to a different jar, since its diameter is considerably smaller than that of jar 3. The rib occurs at a body diameter of 40 cm., is 2 cm. wide at the base and comes to a point.

Jar 6 was broken into large sherds, with no identifiable fragments from the rim. The base, 30 cm. in diameter, was of the rounded, pedestal type (fig. 181, type *C*). The walls curved upward and then inward, forming a rounded shoulder

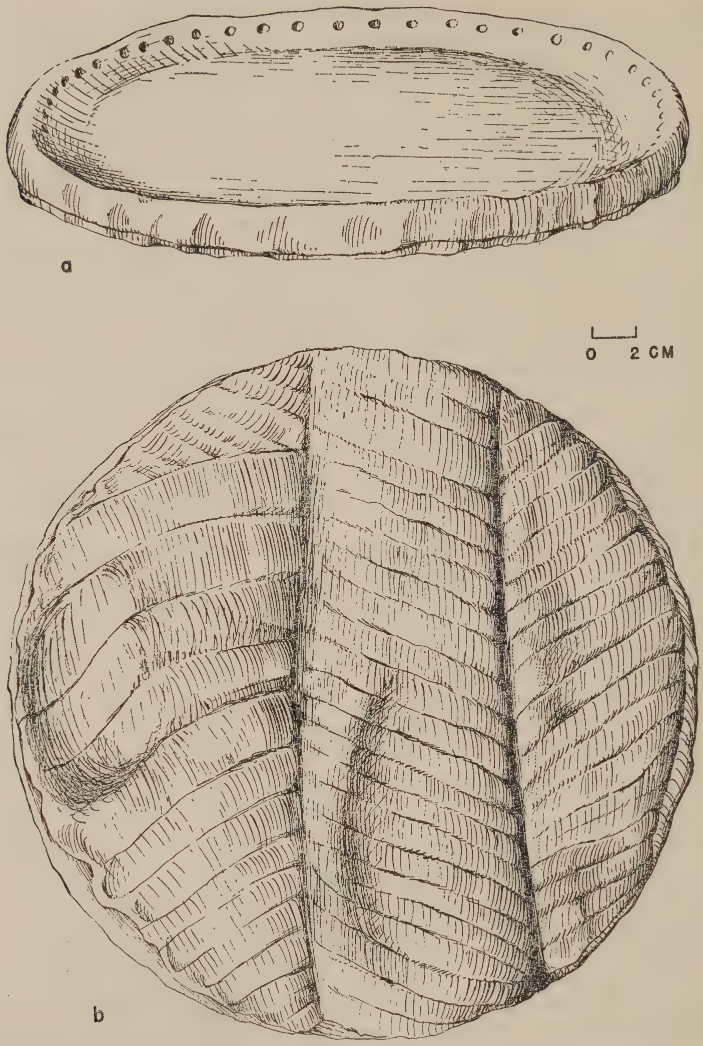


Figure 195.—Piratuba Plain platter from the Aruã Phase site, C-12—Condino.

merging into an insloping neck. The point of junction was set off by a raised rib, formed during the building of the wall and not added as applique. The rib narrows from 2.4 cm. at its attachment to 8 mm. at its top, which is ornamented with a row of impressed rings 1.1 cm. in diameter and spaced 1.5 to 2.5 cm. apart (pl. 108, *j*). Below the rib, body wall thickness is 1.2 cm.; above, it increases to 2.3 cm.

Jar 7 (fig. 179, *k*) was found with half its base protruding upside down above the surface. Digging produced sherds from body, neck, and rim, as well as parts of numerous thin-walled vessels, a possible lid and a small figurine. The jar has a flat bottom 23 cm. in diameter (fig. 181, type A), walls upslanting to a rounded shoulder, insloping neck and a heavy exteriorly thickened, flat-topped rim with a diameter of 44 cm. (Piratuba Plain shape 15). A low applique rib 2.0 to 2.5 cm. wide and 6 mm. high runs around the base of the neck. It is ornamented with two rows of punctate circles 4 mm. in diameter, 2 to 6 mm. deep, and 5 to 15 mm. apart, one row along the summit of the rib and the other along the lower edge. Among the numerous associated sherds was one from a large shallow bowl with a mouth diameter of 48 cm., which is large enough to have covered the jar mouth. The rim was of the channel type and slightly thickened on the exterior (Piratuba Plain shape 1).

Jar 8 is indicated by a base fragment of the pedestal type (fig. 181, type C), 17 cm. in diameter, found upright, 20 cm. below the surface. A small grooved ax was resting inside the bottom. The ground between this vessel and jar 1 was full of sherds so that it was impossible to tell which were originally associated with which vessel. It may be that jar 8 was part of the complex burial represented by jars 1 and 2.

Jar 9 was too fragmentary to be reconstructed. Its presence is attested by body sherds from a large jar, which were scattered among sherds from a number of smaller bowls and jars.

Objects of unusual nature from Site C–12 include:

Pottery figurine (fig. 183, *a*).—Associated with the sherds from jar 7 was a small figurine, with a cuboidal head, a trianguloid body, and a convex base. The front and back surfaces are nearly flat, with a slight constriction at the neck. The only modeling is on the head which has a crude face with a deep gash, 1.2 cm. long and 5 mm. wide, for the mouth, ring-shaped eyes made with the end of a reed 5 mm. in diameter, and a modeled ridge leading up from the sides to a slight peak over the nose, which is formed by a similar vertical ridge. A perforation 2 mm. in diameter runs from side to side at the base of the neck, and could have been used to pass a string through for suspension. The figurine is 7.3 cm. tall, 6.2 cm. wide at the base, and 3.5 cm. wide at the head. Thickness from front to back decreases from 4 cm. at the base to 3 cm. at the head. The surface had been smoothed when the clay was fairly wet, giving a slightly floated but still somewhat uneven finish. The ware is Piratuba Plain.

Stone ax (fig. 193, *c*).—The only stone implement came from inside jar 8. It is an ax of fine-grained, whitish-tan diorite with flecks of gray. Pecking marks remain on the upper sides, but were polished over in other areas. The sides are notched by working from the faces, forming a continuous groove 4 mm. wide on one edge but not meeting exactly on the other. The smooth butt rounds to a small flat end 1.5 by 1.2 cm. and shows no evidence of use as a hammer. The bit is convex, well sharpened at the blade and smoothed between it and the notches. Length is 10 cm., width at the blade 6.2 cm., at the notches 5.3 cm., and at the butt 1.5 cm. The cross section is oval, coming to a point at the blade and flattened at the butt end; maximum thickness 3.5 cm.

DATA FROM OTHER INVESTIGATIONS

MEXIANA

Mexiana Island has not been the subject of much archeological exploration in the past as compared to either Caviana or Marajó. Several sites in the interior of the island and on the north coast have been found by various of the landowners and overseers, and one cemetery was visited in the early 1930's by Heloisa Alberto Torres, then director of the Museu Nacional in Rio de Janeiro. No excavations have been conducted in the past, but a few burial urns have been brought out. The following descriptions are based on verbal information and our inspection of these specimens.

M-6—RECREO

This cemetery site is located in the *campo* of the Baixa Grande, just north of the Pirizal Guará (fig. 150). The area is accessible only at the peak of the dry season and then only if the high grass growth of the *baixa* has been recently burnt. At the time of our visit no one on the island had been to the site in recent years, but enough corroborating data came from the *caboclos* and the past landowner, Sr. José Ambrosio Pombo, that there is little doubt of its location and use as an aboriginal cemetery. A large number of burial urns are said to occupy the spot. Photographs of the type of burial jars from M-4 and M-5 were shown to various people and they stated that the same type of large jars with impressed circles on a raised ridge on the neck was found at Recreo. Sr. Pombo remembered that small, glass, red, white, and blue "seed" beads had come from a smaller vessel at the site.

M-8—LIMÃO DA FORA

A peculiar, tubular pottery vessel at Fazenda Nazaré, Mexiana, had been picked up in 1947 when a portion of the bank near the mouth of Igarapé Limão da Fora had caved in. No more specific provenience data could be obtained but the absence of large fragments of burial jars suggest that this must have been a habitation site.

Tubular pottery drum? (pl. 111, *c*).—The tubular pottery object tapers slightly from the wide mouth with rounded edges to the narrow end from which a rim or lip had broken off. One side of the cylinder has two small applique nubbins, the other, two modeled and incised birds. The wear on the nubbins suggests that the object had been placed on its side, resting on the two nubbins so that the two birds are on top. Since the rim is broken off, further evidence for such a position is lost. The crudely modeled, applique nubbins measure 1.0 to 1.2 cm. in diameter, 1 cm. in height, and are spaced 6 cm. apart. One bird is complete; the body is modeled applique 2.5 cm. long and 1.2 cm. high, with a long, slightly curving bill, 2.6 cm. long and 6 mm. high. The two eyes are shown by small punctates and the wings, 2.0 to 2.5 cm. long, and legs, 3.5 cm. long, by incisions made when the clay was still very wet. The combination of modeling and incision makes a very effective representation. The other bird is not complete now, for its body has been broken, but it is of the same type and of the same general proportions, spaced 8.5 cm. from the first. The surface color is light orange with areas that are light gray to black as a result of firing differences. Vertical striations on the exterior and interior were made by a hard polishing tool when the clay was leather hard. Although well smoothed, the surface has a slightly rough texture. The paste is characteristic of Piratuba Plain. The vessel is 18 cm. in diameter at the broad end with a rounded direct lip and tapers to a mouth diameter of 8.5 cm. at the opposite end, where the existing, broken fragment of the rim is 12 cm. in exterior diameter. Total length is 34 cm. The similarity in shape to pottery drums from other areas (Lothrop, 1950, fig. 68) and evidence of horizontal position suggest a similar usage for this specimen and a more fragmentary one from M–7—Aberta (pl. 111, *b*).

M–9—CHAPÉU

Three burial jars have been brought from this cemetery; in 1949, one was in the Museu Nacional, Rio de Janeiro, one in the Museu Goeldi, Belém, and one at the main house of Fazenda Nazaré on Mexiana. The site was visited by Sr. Pombo and Heloisa Alberto Torres in the 1930's. At that time no excavations were made, and no further samples were taken other than the complete vessels. Sr. Pombo assured us that the site is in an environment similar to M–4—Fundo das Panellas, with the burial jars concentrated in a small patch of forest near Baixa de Chapéu. The jar at Fazenda Nazaré has the following features:

Jar 1 consists of the neck, rim, and shoulder with the base and lower part of the body missing. The surfaces are extremely crackled, with smoothing striations running horizontally on the neck and vertically on the body exterior, and with the coiling lines still visible on the neck interior. Coarse, ground-sherd temper particles protrude from the surfaces. It is a typical example of Piratuba Plain shape 16, with an everted, rounded, slightly thickened rim. The mouth diameter is 60 cm., neck height 29 cm., neck diameter at point of junction with body 50 cm., maximum body diameter 71 cm., and a reconstructed body height of 60 cm. Eight centimeters below the rim an applique rib, 5 mm. high, is impressed with an uneven line of circles, 5 mm. in diameter and pressed 3 mm. into the clay.

CAVIANA

In the fall of 1923, Curt Nimuendajú visited Caviana and excavated in a number of sites; the next year, he returned for further work. Examination of the descriptions and places compiled from his field notes by Rydén (MS.) permits identification of all of them as Aruã. Although the names have changed and the geographical locations, often based on landmarks like houses, are sometimes obscure, it appears that one of the sites he visited but did not excavate because of the hard-packed soil was our C–9. Two others can be identified as C–4 and C–8. The *caboclos* had lost track of the rest of his sites on the Pacajá and Apaní by the time we came 25 years later.

Since the majority of the sites reported by Nimuendajú produced a considerable quantity and variety of European trade material in contrast with those we excavated, they are of importance in extending the description of Aruã culture forward into historical times. The following brief summaries have been abstracted from Rydén's (MS.) compilation of Nimuendajú's field notes and Rydén's description of the pottery:

CAMPO REDONDO

This cemetery is in a large strip of forest near the headwaters of the Rio Apaní. In Nimuendajú's words:

> The urn-site I visited is situated near the edge of a forested Teso. The rims of some of the urns projected from the ground like mouths of cannon; others were buried as deep as 1 m. Numerous urns of all sizes were placed so close together that it was necessary to dig between them with a knife-blade, and it was impossible to lift one out without damaging several others. Between the urns a lot of fragments not belonging to them were placed. [Rydén, MS.]

The jars were plain and contained bone fragments representing secondary burial. A long glass bead with blue and white stripes was found in one jar. One urn had a crude bowl lid.

SÃO DOMINGO

A site of uncertain character is on the right bank of the Rio Pacajá, 300 meters southwest of a house occupied in 1924. Nimuendajú was refused permission to dig, but concluded from superficial examination that the cemetery had been destroyed. He notes, however, that the owner insisted that nothing but sherds had ever been found, although other people claimed that human bones and teeth, greenstone beads, and European objects like white beads and iron implements had been dug up. This may be the habitation site we designated as C–8—Pacajá.

TESO DA SUMAHUMA

In the large, forested elevation between the Rio Pacajá and its tributary the Igarapé Paricá, is an Aruã cemetery. It occupies the most elevated portion of the ground and is marked by a large tree with widely radiating, exposed roots. At the time of Nimuendajú's visit, the tree trunk was 2 meters in diameter and the roots covered an area of more than 6 square meters. Broken jars were visible on the west side in the niches formed between the roots. Twelve urns were identified from the fragments; some of them retained traces of bone and, in two cases, teeth. One vessel had an anthropomorphic face on opposite sides of the neck (Nordenskiöld, 1930, pl. 22, *c*) and another was decorated with applique strips in straight and undulating rows. There were no objects of European origin associated.

The location and description of this cemetery closely resembles that of our site C-4—Teso dos Indios. The probability that the same site is involved here is increased by the fact that the only side of the tree where no pottery was found on our visit was the west, where Nimuendajú describes excavating 12 urns (fig. 178).

ESPERANÇA

Farther up the Paricá, on the right bank, were traces of another Aruã site. Plain sherds were lying on the surface and excavation produced a few small glass beads and a rusty chisel.

TESO DOS INDIOS

This name applies to the entire forested area bounded on the south by the Rio Pacajá and on the east by the Paricá. An Aruã cemetery is located toward the western edge. Fragments of 19 large burial jars, up to 63 cm. in diameter, were visible on the surface and 8 smaller vessels were found in excavation. The jars were all undecorated and contained black dirt, sometimes with bone fragments (only one including teeth) and often burial gifts of either aboriginal or European origin. Fragments of lids in the form of large bowls were associated with three jars and complete bowl lids with two.

Objects of Indian origin included: an ax 12 cm. long, of grayish-green, fine-grained diorite; a flat pendant 2.2 cm. long, of green, semitransparent nephrite; a similar pendant 3.0 cm. long; 6 nephrite beads (3 illustrated by Nordenskiöld, 1930, pl. 43, b–d); 8 teeth, of which 4 had been used as beads; a lump of jutahi resin; 4 lumps of red ocher, and a small lump of raw rubber. European trade material was represented by a pair of scissors, 2 chisels, a fragmentary iron knife, an iron chopper, 2 brass bells, a fragment of a glass mirror, 2 iron table knives, an iron ring, and an abundance of beads of many types and colors. These had been placed in the urns or in smaller vessels beside them, or were loose in the earth. The objects of Indian origin were always associated with those of European manufacture; other jars contained only European goods.

BACABAL I

The Rio Pracutuba, on the eastern end of Caviana, flows through an area characterized by long, low natural elevations covered with dense forest. Three cemetery sites, called by Nimuendajú Bacabal I, II, and III, are located on one of these elevations between the Limão and Bacabal, tributaries of the Rio Pracutuba. Bacabal I is by far the largest of the three and produced some two dozen vessels, a few of which retained traces of painted decoration in red and black. Applique was present on two small jars and one was incised with vertical lines on the upper exterior. The associated objects, all of Indian origin, included three stone axes with nearly parallel sides and convex blades, and a cylindrical, nephrite bead.

PESQUEIRO

About 1 km. northeast of Bacabal I, on the upper Igarapé do Pesqueiro, is a habitation site marked by abundant surface sherds of a thick and coarse pottery. No decorated examples were found. These characteristics are typical of Aruã village sites.

PRAINHA

A cemetery producing unusually shaped, painted urns is located on another of the natural elevations in the Rebordello area. At the time of Nimuendajú's visit, it was occupied by a small settlement, and the attitude of the local people prevented any adequate examination. Nimuendajú was able to collect only two fragments, one painted black-on-white, the other black-and-red-on-yellow. A painted jar in the form of a squatting human figure, with the head forming the lid, was said to have been found previously.

REBORDELLO

The farthest west of the natural elevations, the site of the village of Rebordello, is the location of the largest urn-burial cemetery that Nimuendajú encountered. Wherever houses were built, graves were dug, or pigs rooted, fragments of pottery or complete vessels were turned up. Most of the urns were plain ware, but applique and painted decoration were relatively frequent, and a number of the jars had anthropomorphic features. Examples have been illustrated by Nordenskiöld (1930, pls. 19–22). The relatively good condition of the bones in the jars permitted a more detailed description of the burial pattern than was possible from other sites:

> Generally, the urns contained only one skeleton, though occasionally there were two skeletons. Often the bones, or the larger ones at any rate, were painted red with Urucú. . . . Usually the long limb bones are placed vertically against the wall of the urn in a pile. The skull lies on the smaller bones; the inferior maxillary bone was always detached. [Rydén, MS.]

The most common form of burial gift was a small vessel or vessels placed beside the urn. Other objects encountered included a small piece of resin, two bits of sandstone, two fragments of a cylindrical, nephrite bead, and a few tiny, white and blue china beads.

ANALYSIS OF MATERIALS OF THE ARUÃ PHASE

POTTERY TYPE DESCRIPTIONS

The study of Aruã Phase pottery is based upon specimens from the Territory of Amapá and the Islands of Caviana, Mexiana, and Marajó, comprising a total of 12,589 sherds and 120 jars and small vessels. Although numerous efforts were made to break down the pottery into several groupings, it was impossible to arrive at any subdivision of the plain sherds that proved meaningful. The Aruã Phase is therefore represented by a single plain pottery type. Decoration is sporadic and infrequent and it seemed more functional to consider occasional applique or circle impressions on the large burial jars as minor variations in Piratuba Plain. After considerable deliberation, brushing and one type of incision were separated as distinct pottery types because, although they are represented by a very small sample, they are found only at early sites and are therefore important as time markers. The pottery types are established according to the currently accepted binomial system, the first name referring to a local geographical proper name and the second term descriptive. The detailed descriptions of each type are arranged in alphabetical order.

ABERTA INCISED

PASTE AND SURFACES: Incised designs were applied to occasional vessels of Piratuba Plain; see that pottery type for details of color, temper, firing and surface finish.

FORM: All but one example of this type are body sherds; the single rim is from a shallow bowl with an interiorly thickened rim and a flat top.

DECORATION (pl. 102):

Technique: The incisions are composed of two major types of lines, which are both present on the same sherd. Broad incisions, made with a flat-ended instrument when the clay was partially dry, are most frequent. They are 1–2 mm. in width and the depth is typically 0.5 mm., with some occasionally as much as 1.0 mm. A smaller number of sherds have finer and fainter incisions, which are often difficult to see on the rough and irregular surface.

Motif: Most designs are composed of parallel, straight lines, either in pairs or single lines. In several instances, these intersect a straight line running at a slight diagonal. Less frequently, the lines are curved or scalloped or in the form of large cross hatch.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE: Restricted to the early part of the Aruã Phase.

NAZARÉ BRUSHED

PASTE: This decorated pottery type is on Piratuba Plain; see that pottery type description for details of temper, color, texture, and firing.

SURFACES:

Color: Exterior and interior—Light tan to bright orange to brownish tan.

Treatment::

Interior—Surface floated in the smoothing process, but clay left very irregular and uneven with the ground sherd temper particles causing lumps on the surface. Many small holes from water bubbles indicate the clay was worked when fairly wet.

Exterior—Treated as the interior first, then brushed.

FORM:

Rims: Probably typical forms of Piratuba Plain; only 1 rim found. It was externally thickened, from a vertical-walled vessel with a mouth of 22 cm. in diameter. The thickened area of the rim is 1.0 cm. thick and 1.2 cm. long.

Body wall thickness: 4–10 mm.; majority 7 mm.

Body: Globular or rounded.

Base: No sherds found.

Vessel shape: Sherds suggest rounded jars with slightly constricted mouths.

DECORATION (pl. 103):

Technique: Exterior brushed lightly with a bunch of sticks from the rim downward to the base in a vertical pattern or sometimes horizontally around the body. No diagonal brushing, but the brushed lines often overlap. Brush marks appear to be regulated by the dryness of the surface when brushed, ranging from 0.5–1.0 mm. deep, with individual lines averaging 1.0–1.5 mm. apart.

Motif: No pattern, merely an effort to cover the exterior surface with vertical brushings, sometimes placed parallel to the rim around the body. Apparently limited to the body surface for only 1 rim or neck sherd was found intact with the brushing terminating at the collar.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE: Early part of the Aruã Phase.

PIRATUBA PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: Fine to coarsely ground sherd, clearly distinguishable in 50 percent of the sherds, where the temper comprises about 30 percent of the mixture; otherwise, the temper blends into the paste so that it is invisible. Fairly evenly distributed except that coarse particles tend to be clustered.

Texture: Generally compact and fine-grained in appearance but with an angular, granular cleavage produced partly by the angular temper particles. Harder to break than sandy pastes of other pottery, but still a relatively soft pottery. Dull thud when knocked together.

Color: Medium to dark-gray core typical with band of light tan to orange red extending 1–3 mm. inward from both surfaces. About 30 percent are fired light tan to orange through the cross section.

Firing: Incompletely oxidized; fire clouds rare.

SURFACES:

Color: Light tan to light orange to bright orange to orange tan to brownish tan to rusty orange on exterior and interior. On a single sherd or vessel the color shows little variation. Some better-smoothed surfaces have a dark-red film produced by rubbing with a lump of red ocher.

Treatment: Interior and exterior—Coil lines erased but smoothing superficial, leaving a porous, pitted appearance and an uneven and irregular surface. A small percentage are even and slick and these generally have a red film left by the ocher used as a smoothing tool.

Hardness: 2–2.5.

FORM:

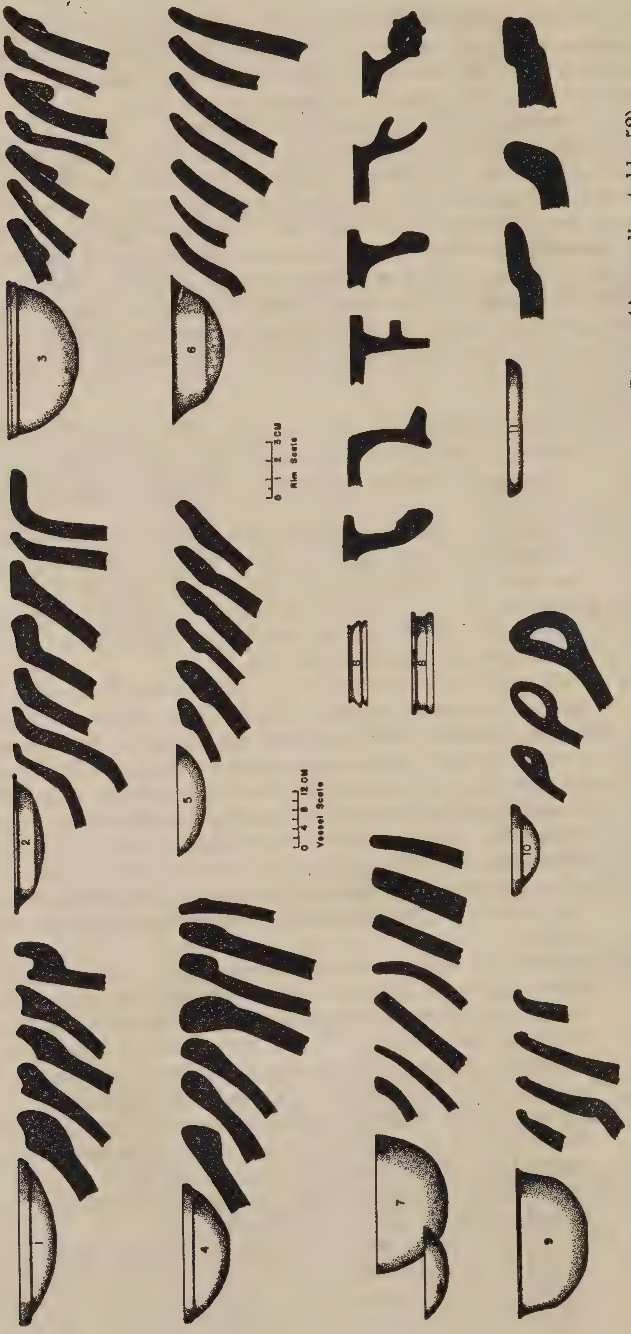
Rims: Everted, interiorly thickened or exteriorly thickened, folded-over (junction of added coil with body wall not erased in cross section or smoothed over on exterior), channeled, direct, "pinched," and hollow with either rounded, pointed, or square lip (pl. 104).

Body wall thickness: 4–23 mm., majority 8–15 mm.

Bases: Bowls probably flat or flattened to some extent, rarely concave. Jar bases are (A) flat, (B) concave, depressed to 1.5 cm. at the center of the exterior, (C) pedestal, rising vertically for 5–20 mm. on the exterior before joining the outsloping body wall, or (D) rounded (fig. 181). Flat bases are generally thickened toward the center on the interior and may attain 2.5 cm. in contrast to 1.5 cm. at the junction with the sidewall. Because a large percentage of vessel-shape classifications were made on rim sherds, these base types cannot be distinguished as associated with any particular rim type. It is probable that the first three are alternatives employed on all the jar varieties.

Vessel shapes:

1. Shallow to deep bowls with expanded or exteriorly thickened rim bearing a shallow to deep groove or channel on the upper edge, often slanted toward the interior. Maximum diameter 20–48 cm. (fig. 196–1).
2. Rounded or mildly carinated bowls with sharply everted rim, flattened top horizontal or sloping toward interior and square or rounded lip. Rim diameter 20 to 40 cm. (fig. 196–2).
3. Bowls with folded over rims, rounded to pointed lip; generally deep and rounded on the bottom, occasionally shallow and flat bottomed Rim diameter 18–42 cm. (fig. 196–3).
4. Bowls with exteriorly thickened rim, rounded to squarish lip, probably rounded bottom. Rim diameter 19–52 cm. (fig. 196–4).
5. Shallow, rounded bowls with rim thickened on interior so as to produce broad, sloping, flat-topped, shelflike band along the interior, 2–3 cm. wide. Rim diameter 16–46 cm. (fig. 196–5).
6. Bowls with outflaring upper wall ending in a direct rim with square, rounded or pointed lip; bottom probably rounded. Rim diameter 22–46 cm. (fig. 196–6).
7. Bowls with straight or incurving walls, direct rim, square to rounded lip, probably rounded bottom. Rim diameter 14–42 cm. (fig. 196–7).
8. Flat-bottomed bowls or lids with short, slightly outslanting walls and ornate exteriorly thickened or flanged rim. Junction of the wall to the base inset so the base projects up to 1 cm. Flat exterior of base may be ornamented with thin applique strips and disks. Generally circular, occasionally rectanguloid. Diameter of rim exterior 12–24 cm. (fig. 196–8, drawn inverted as a lid).
9. Deep bowls with slightly everted upper walls "pinched off" just below the tip to produce a small, sharply defined rim with a rounded lip. Diameter 11–46 cm. (fig. 196–9).
10. Bowls with hollow rims produced by exterior or interior thickening. Rim diameter 20–42 cm. (fig. 196–10).
11. Flat, heavy griddles with upturned or interiorly thickened rim, usually ornamented with one or two rows of punctates. One specimen has the impression of a leaf with a thick central rib on the exterior. Diameter 34–45 cm (figs. 195, 196–11, pl 107).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Rim Scale
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Vessel Scale

FIGURE 196.—Rim profiles and vessel shapes of Piratuba Plain bowls, Aruã Phase (Appendix, table 52).

12. Large burial jars with rounded body, tall vertical neck and everted rim expanding in thickness toward a square or rounded lip. Rim projects 2–6 cm. beyond the neck and has a diameter of 50–70 cm. All of this type were ornamented with a row of impressed circles on the neck (fig. 197–12; pl. 109).
13. Burial jars with ornamental, overlapping coil or undulation in the body wall 8–14 cm. below the folded-over (rarely direct) rim; large rounded body. Rim diameter 26–32 cm. (fig. 197–13).
14. Jars with a cambered neck and exteriorly thickened rim with square or rounded lip; probably large rounded body. Rim diameter 24–48 cm.; height of camber 6–11 cm. (fig. 197–14).

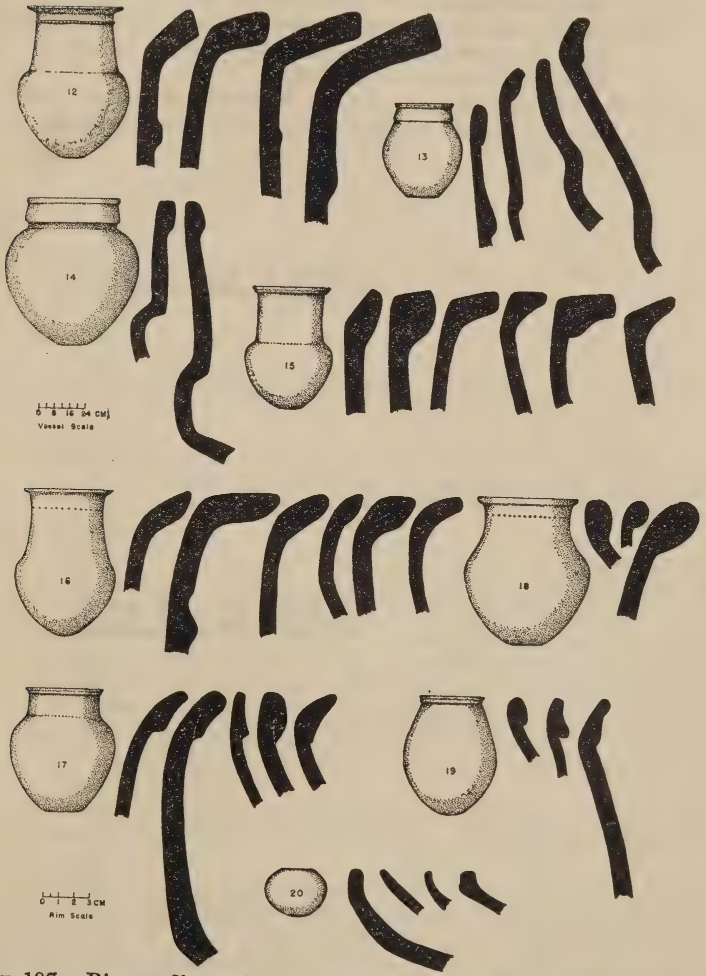

FIGURE 197.—Rim profiles and vessel shapes of Piratuba Plain jars, Aruã Phase (Appendix, table 52). The vessel shape is a generalized version of a varying form (cf. figs. 171, 179).

15. Jars with rounded body, vertical or insloping neck and everted rim decreasing in thickness toward the lip, which is rounded or square. Flat rim top joins the inner neck wall with a sharp angle. Rim diameter 36–56 cm. Rare ornamentation with row of impressed rings around the neck (fig. 197–15).
16. Jars with rounded body, vertical or insloping neck and everted, unthickened or slightly thickened rim tapering to a rounded or pointed lip. Rim diameter 32–64 cm. (fig. 197–16).
17. Jars with large body expanding from base to shoulder, then contracting to join short, straight or concave-sided neck which terminates in a slightly everted, folded-over rim with a square lip. Rim diameter 26–50 cm. (fig. 197–17).
18. Jars with rounded or elongated rounded body, insloping or concave neck and exteriorly thickened rim with a rounded lip. Rim diameter 18–52 cm. (fig. 197–18).
19. Jars with globular or ovoid body, constricted mouth and folded-over rim with square or rounded lip. Rim diameter 18–40 cm. (fig. 197–19).

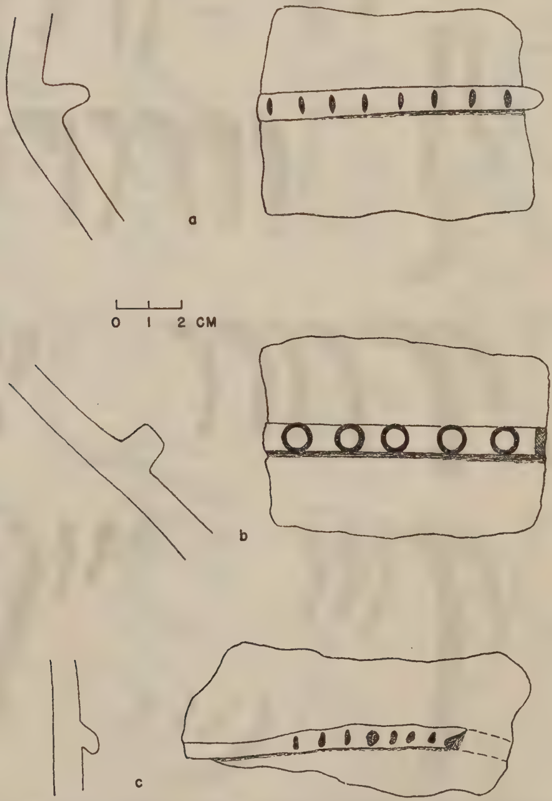

FIGURE 198.—Piratuba Plain sherds with modeled decoration from various Aruã Phase sites. *a,* C–11—Vaquejador de São Sebasteão. *b* C–12—Condino. *c,* C–6—Croatasal.

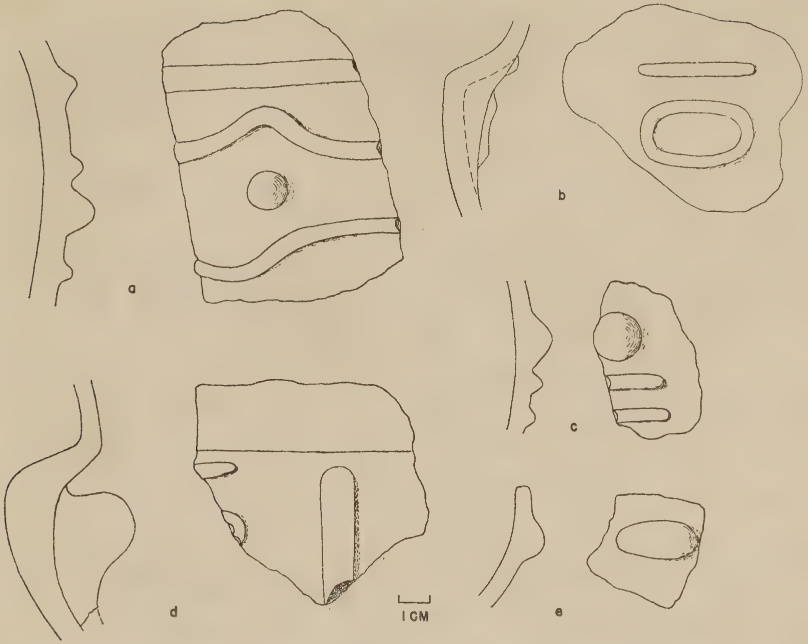

FIGURE 199.—Piratuba Plain sherds with modeled decoration from various Aruã Phase sites. *a*, C–1—Teso das Igaçabas. *b–e*, C–6—Croatasal.

20. Jars with rounded body, constricted mouth and direct rim, sometimes upturned 1–4 cm. below the rounded lip. Rim diameter 14–42 cm. (fig. 197–20).

Occasional decoration:

Applique: Ribs averaging 1 cm. wide and 1 cm. thick, and conical nubbins up to 3 cm. in diameter and 1 cm. high occur throughout the Aruã Phase (figs. 198, 199, 200; pls. 108, 110, 111, *a*).

Impressed rings: The surface of the neck or of a low applique rib around the neck or the shoulder of a large jar sometimes bears a row of rings made by pressing the end of a hollow reed or cane into the wet clay. The rings are not evenly spaced or placed in a straight row. Diameter is 0.6–1.5 cm., with the depth varying from 3–5 mm. This type of occasional decoration is most frequent in the earlier part of the Aruã Phase (pls. 108, 109).

Punctate: A row of punctates is sometimes substituted for the more usual row of impressed rings on a rib or along the rim of a griddle (pl. 107).

TEMPORAL DIFFERENCES WITHIN THE TYPE: There is a consistent improvement in surface finish from early to late Aruã Phase sites, including an increase in the frequency of rubbing with red ocher. Bowl shapes 1 and 5 and jar shapes 12 and 16 tend to be early, while jar shapes 13 and 14 are found only in late sites. Jar shape 17 increases in frequency and bowl shapes 2, 3 and 6 show a decline. Bowl shape 7 increases in popularity from the early to the middle part of the Phase and then declines (Appendix, table 52).

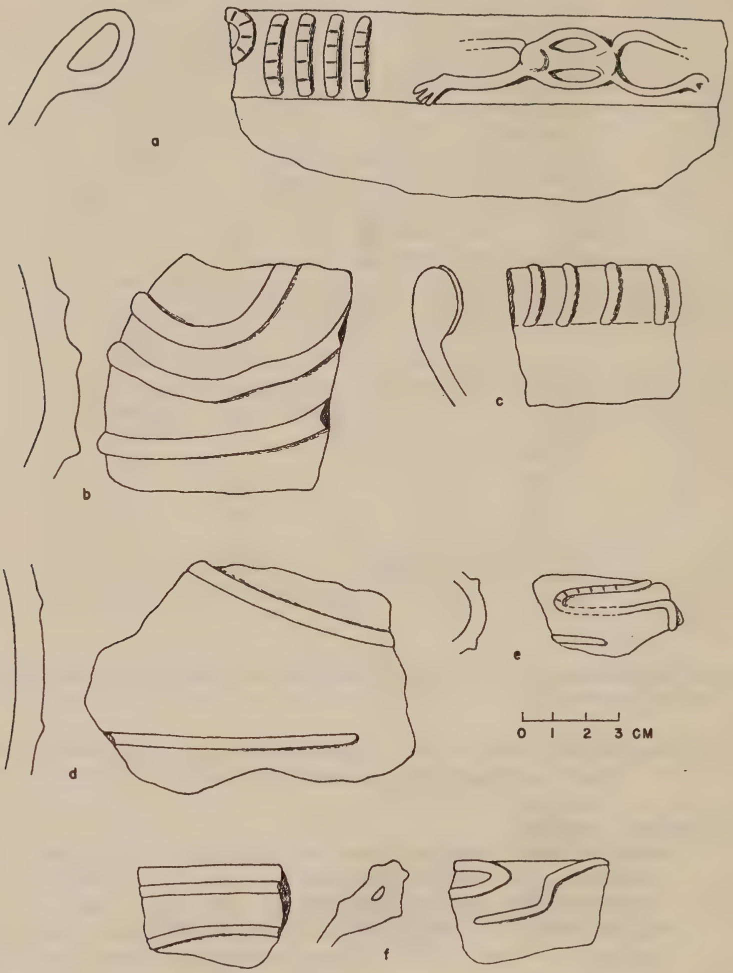

FIGURE 200.—Piratuba Plain sherds with modeled decoration from various Aruã sites. *a*, C–9—Frei João. *b–c*, C–1—Teso das Igaçabas. *d–f*, C–6—Croatasal.

CHRONOLOGICAL POSITION OF THE TYPE: The dominant pottery type throughout the Aruã Phase.

UNCLASSIFIED DECORATED

Several types of decoration used during the Aruã Phase are either too poorly defined or too infrequent to warrant the establishment of separate pottery types. Most abundant is applique in the form of nubbins and fillets, which has been considered as an occasional embellishment of Piratuba Plain and included as a minor variant in the analysis and type description. The same approach was also used with rows of impressed rings which were frequently applied to applique ribs. Painting appears to become frequent in the late sites, but only two sherds were found during our excavations and provided insufficient information for an adequate description. Hence painted sherds are here included in unclassified decorated. The other techniques left unclassified are punctate, a distinct type of cord impression, fine incision, fine applique, and corrugation.

PAINTING:

1. Red-painted designs executed on the unslipped vessel surface.
    a. Bowl interior with a narrow band of red along the rim interior and a wider one (possibly covering the entire bottom) 4.5 cm. below, the two connected with diagonal bands (fig. 172, *b*). One sherd from C–6—Croatasal burial area (section A).
    b. Exterior of burial jar with traces of curvilinear design in narrow (2–4 mm.) red lines (fig. 172, *a*). One sherd from M–4—Fundo das Panellas, Vessel 20.
2. Black designs executed on the unslipped vessel surface.
    a. Curvilinear design utilizing concave-sided, triangular areas, with lines of unequal width and carelessly applied. One sherd from Prainha (Rydén, MS.).
3. Red and black designs on the unslipped vessel surface.
    a. Single or paired lines (2 black or one red and one black) forming rectangles or spirals. From Bacabal I (Rydén, MS.).
    b. Areas of red leaving spirals and V's of the original vessel surface, giving a negative effect. Sometimes bordered by black lines and accompanied by black bands. From Prainha (Rydén, MS.).
    c. Geometric designs of broad black lines and fine red ones. Several examples from Rebordello (Nordenskiöld, 1930, pl. 20; Rydén, MS.).

PUNCTATE:

1. Rows of punctates of unequal size and shape, ranging from rounded to elongated. Three sherds from M–7—Aberta.
2. Occasional sherds substitute a row of punctates for the usual row of impressed rings on a rib or along the rim of a platter (pl. 107). These variants have been included with the impressed rings as occasional ornamentation of Piratuba Plain and are considered as part of that type.

CORD IMPRESSION:

1. The exterior thickening of a rim of Piratuba Plain shape 4 bears alternating horizontal and vertical lines 2.0–2.5 mm. wide and 2.0 mm. deep made by pressing a piece of cord into the moist clay. One sherd from A–23—Ilha da Fortaleza, Conceição.

INCISION:

1. Simple design composed of widely spaced pairs of fine incised lines, crudely executed, with overshot corners and angular curves (fig. 186, *c*). Exterior of a vessel from C–9—Frei João.
2. Concentric triangles of fine, unequally parallel lines, sometimes wavy rather than straight, and with overshot corners (fig. 186, *a*). Flat top or bottom of a vessel of shape 8, which also has applique decoration; from C–9—Frei João.
3. Undulating line with shorter strokes parallel to it filling the curves. Incisions fine and sharp, but lines slightly irregular and not consistently parallel. Top and side of a vessel of Piratuba Plain shape 8 from C–9—Frei João.

Fine appliqué:

1. Row of small nubbins, 2.5–3.0 mm. in diameter and 0.5 mm. high, ornamented with a small impressed circle or notch. Regularity of spacing, regularity and delicacy of execution strongly suggest use of a die or mold. Two examples from C–9—Frei João, one with additional relief decoration.
2. Low relief bands 1–2 mm. wide and 0.5 mm. high, forming parallel lines or spirals. Execution is regular, even and uniform, and especially in the case of the spirals strongly suggests the use of a mold (fig. 186, *b*). Two examples from vessels of Piratuba Plain shape 8 from C–9—Frei João. One is also decorated with fine incised lines (fig. 186, *a*).

Corrugation:

1. Irregular corrugations along the coil line, 8–12 mm. wide and rising 1–3 mm. above the surface. Two examples from J–2/3—Chaves Airport (pl. 112, *a–b*).
2. Punchings with finger tip or stick producing a roughened surface with shallow depressions and slight bumps. One sherd from J–2/3—Chaves Airport (pl. 112, *c*) and 3 sherds from M–7—Aberta (pl. 112, *d–f*).

Pottery Artifacts

Pottery artifacts were found only in cemetery sites of the Aruã Phase. They include crude, trianguloid figurines (fig. 183) and crude, solid beads or spindle whorls (fig. 192). Both types of objects were associated with burials.

Nonceramic Artifacts

Characteristic of the Aruã Phase, in contrast to the other archeological Phases at the mouth of the Amazon, are polished trianguloid or rectanguloid, ungrooved or slightly nicked stone axes (fig. 169, 184, 185, 193). These vary somewhat in symmetry and completeness of polishing, but typically have a convex blade and narrow to a flattened or rounded butt. Length ranges from 6.4 to 13.5 cm. Specimens occur occasionally in habitation refuse but were found most frequently in association with burials in cemeteries.

Another type of stone object restricted to the Aruã Phase is ornaments of nephrite. These include polished, cylindrical or flat, disk-shaped beads (fig. 188, *d–e*) and small, flat pendants or amulets with one end carved in the form of a bird head, identified as a vulture (fig. 188, *a–c*). All of these have come so far from cemetery sites, specifically M–5, C–4, C–9 and Nimuendajú's sites of Teso dos Indios, Bacabal I and Rebordello.

CERAMIC HISTORY

The ceramic history of the Aruã Phase is based on the analysis and classification of 12,589 sherds and 120 complete or nearly complete vessels. This material is typified by an almost total absence of any type of decoration, and although there are certain differences, particularly in surface finish, the gradation between them is so gradual that it was impossible to make a breakdown into two or more plain wares, whose relative frequency would be a guide to the chronological position of the sites. As a result, all but 3 Aruã Phase sites have 99–100 percent Piratuba Plain. Of the decorated types, Nazaré Brushed, Aberta Incised, and painting turned out to have temporal significance, but were too rare and present at too few sites to be used for site seriation (Appendix, table 51). A further difficulty in the establishment of a chronological sequence stems from the fact that none of the habitation sites presented sufficient depth in refuse accumulation to permit stratigraphic excavation.

Fortunately, there exist two lines of evidence that partially make up the absence of stratigraphy, and make it possible to establish the beginning and end of the sequence. The fact that the Aruã Phase is the first occupant of the Territory of Amapá and the last occupant of the Islands of Mexiana, Caviana, and Marajó and migrated from the former to the latter makes it possible to define early characteristics in the ceramics. On the islands, the presence of European trade materials gives a post-Columbian date to the sites in which they are found, and the amount and variety can suggest the readiness with which such objects were available and through this the intensity of European activity.

Since the seriation could not be carried out on the basis of differential frequency of several plain wares, the attempt was made to substitute a detailed classification of vessel shape. Since the majority of the classifications had to be made from rim sherds, in which the exact body contour could not be ascertained, and since evidence from cemeteries with nearly complete vessels indicated no well-marked differences in body shape, the main criterion used in establishing vessel shape categories was rim form. It was possible to distinguish 20 well-defined rim types, of which 11 represent bowls and 9 jars. These were tabulated for each Aruã Phase site, and the percentage frequency computed (Appendix, table 52).

Before the seriation could be undertaken by this method, however, it was necessary to find a substitute for vessel shape in identifying the earliest sites on the islands. Site A–8 produced no rim sherds, and A–5 such a small number that the percentages derived from them could not be considered sufficiently reliable to be used as the initial basis for the Aruã Phase seriation. Fortunately, one of the rare decorated types, Aberta Incised, occurs both at A–8 and M–2, and the sherds are so similar both in surface features and decoration as to be almost indistinguishable (pl. 102). This makes it reasonably certain that M–2 is an early habitation site on the islands, and the vessel shapes it produced are representative of the earlier part of the Aruã Phase. Sites with these vessel shapes were placed at the lower end of the scale and those producing European trade goods near the upper end. This gave a preliminary indication of the extremes, and the remaining sites were seriated according to the way in which their vessel shape frequencies best fit the trends (Appendix, table 52). Since it seemed possible that the cemeteries and habitations might exhibit differential percentages of certain vessel shapes that would distort the trends, they were seriated independently. The validity of this procedure was indicated when vessel shapes 10 and 12 were found to occur only in cemeteries and shape 15 turned out to be considerably more abundant in cemeteries than in habitations, while shapes 18 and 19 were most numerous in the habitations. Other shapes showed a similar frequency in both types of sites (fig. 201).

Several vessel shapes show definite time distinctions. Bowls of shapes 1 and 5 and jars of shapes 12 and 16 tend to be early. At the opposite end of the scale, jars of shapes 13 and 14 are present only at the later sites. Jar shape 17 occurs at almost all sites, but shows a tendency to increase in frequency. Bowl shape 2, present at most sites, undergoes a slight decline, and the same appears to be true of shapes 3 and 6, although the trend is less marked. Bowl shape 7 appears to increase and then decrease in popularity.

In view of the notable lack of any clearcut trends in vessel shape frequency in most of the pottery types of the other archeological Phases, these results might be suspected of having been "tailor-made" rather than being an expression of the actual situation. This reservation can be checked against the differences that can be observed in the quality of Piratuba Plain in different sites and the occurrence of rare types of decoration.

There is a consistent improvement in the quality of Piratuba Plain, particularly in surface finish, during the Aruã Phase sequence. At the earliest sites on Mexiana, Caviana, and Marajó, as well as in the Territory of Amapá, the surfaces are poorly smoothed so that they remain uneven and irregular and have a characteristically porous and pitted appearance. Another indication of superficial smoothing is the uneven thickness of the vessel walls. The whole effect is one of extreme crudity. In the latter part of the sequence, reaching its greatest abundance at Sites C–7 and C–6, an increasing number of Piratuba Plain sherds have a well smoothed, even surface. Some are slick to the touch, and these generally have a deep-red film, apparently the result of polishing with a lump of red ocher. Sherds with irregular, poorly smoothed surfaces are still typical, however, and about 85 to 90 percent still have these characteristics even in the late sites.

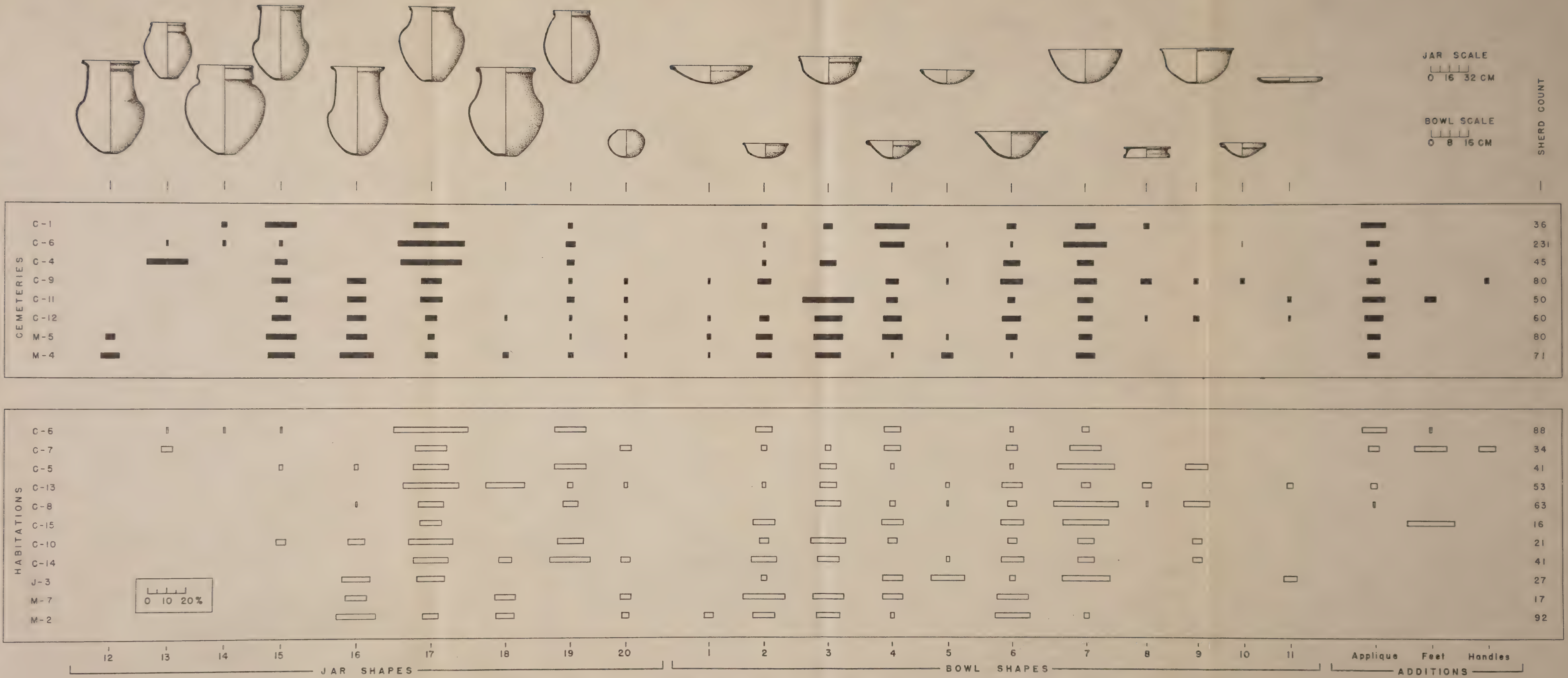

FIGURE 201.—Seriation of Aruá Phase sites on the basis of vessel shape frequency of Piratuba Plain (Appendix, table 52)

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Decoration is less frequent in the pottery of the Aruã Phase than in any of the other archeological Phases distinguished in the mouth of the Amazon. What does exist is generally poorly defined and not sufficiently consistent or abundant to permit classification as a separate pottery type. One exception was made in the case of Nazaré Brushed, because a considerable number of sherds bearing brush marks came from two early habitation sites (M–2 and M–7), and brushing had been recognized as a common decorative technique in the earlier Tropical Forest Phases. Another exception was made for Aberta Incised because of its temporal significance and its role in helping to establish the close connection between early Aruã sites on the islands and those in the Territory of Amapá. Motifs are typically rectilinear and composed of parallel or intersecting incised lines.

The most frequent method of decoration, and the only one that extends over the entire Aruã Phase sequence, is applique in the form of strips or nubbins. These are often ornamented with rows of impressed rings or finger impressions in the earlier sites, whereas in the later ones the applique strips are sometimes manipulated to form undulating rows, crude faces, or sprawling figures. Further evidence of the predominance of this plastic tradition of ornamentation appears in the occasional occurrence of crude anthropomorphic or zoomorphic vessels and adornos or parts therefrom.

Except for one jar with traces of a linear design in red from M–4 and one bowl with a simple red-painted design from C–6, no painting was detected on any sherds or vessels recovered from any of the Aruã Phase sites during the 1948–49 excavations. Sites on the eastern tip of Caviana, reported on by Nimuendajú, however, produced a number of painted examples (p. 533). Since the surfaces of sherds from sites seriating in the latter half of the sequence were generally in good condition and showed little or no evidence of erosion, the absence of painting cannot be explained as a result of loss by weathering. These sites in the Rebordello area of Caviana are late post-contact, to judge from the quantity and variety of European goods they produced. In this period there was considerable contact with the Guiana mainland, especially in the area occupied by the Aristé Phase, and it is possible that the increased emphasis on painting is a result of Aristé Phase influence. Contact also seems the best explanation for the similarity between Piratuba Plain shape 14 and Aristé Plain shape 1.

Site C–9, although conforming to the general Piratuba Plain vessel shapes, exhibits certain atypical features especially in decoration that set it apart. The only well-executed example of naturalistic modeling from the Aruã Phase is a small, owllike bird used as a rim adorno (fig. 187). Incised designs using fine lines and fine relief that suggests the use of a stamp or mold are also represented only at this site.

DIAGNOSTIC FEATURES OF THE ARUÃ PHASE

Habitation sites of the Aruã Phase have been encountered in the Territory of Amapá and on the Islands of Mexiana, Caviana, and Marajó. They are located on the bank of a navigable stream in the forest, generally not far inland from the coast. The sherd refuse is thinly scattered in a small, circular, or oval area, rarely covering more than 300 square meters. The refuse deposit is almost entirely on the surface, extending only a few centimeters at most into the soil, which bears no trace of discoloration to distinguish it from that of the surrounding forest.

Aruã cemeteries, found on Mexiana and Caviana, are also located in the forest, but farther inland and away from streams. Secondary burial was practiced, the bones placed in large jars which were set on the surface of the ground or in a shallow hole. The long bones appear to have been laid along one side, but poor preservation prevented recognition of any other details of skeletal position. Some bones show traces of red paint. Although associated materials are not typical, various burials produced small bowls, stone axes, pottery and nephrite beads, pottery figurines, and in the late cemeteries, glass beads and other objects of European origin. Burial jars were plain or decorated with a row of impressed rings and/or a strip of applique.

Stone alinements are characteristic Aruã Phase sites on the mainland, but none have been reported from the islands, probably because of the absence of native stone in sufficient quantity for their construction. The stones were set on end in a linear, circular, or triangular arrangement, on an elevated spot. Except for occasional scattered sherds, nothing has been found associated. The absence of indications of habitation or cemetery use leads to the assumption of some ceremonial significance.

Ceramically, the Aruã Phase is identified by Piratuba Plain, a sherd-tempered, tan-to-orange surfaced ware, which accounts for 99 to 100 percent of the sherds at most sites. There is no well-defined tradition of ceramic decoration. Simple brushing (Nazaré Brushed), crude incision (Aberta Incised), and a row of impressed rings around the neck or shoulder of Piratuba Plain jars are early techniques, while painting is late. Applique in the form of strips and nubbins occurs throughout the Phase as the most abundant form of ornamentation, and is particularly frequent in the cemeteries (fig. 201).

Typical artifacts other than vessels include crude, trianguloid pottery figurines, rectanguloid, and trianguloid axes of polished diorite, and flat or cylindrical nephrite beads.

The termination of this Phase was brought about by the European conquest and colonization of the islands. For several centuries after

A. D. 1500, the Aruã fought a losing battle with the Portuguese, and finally disappeared from sight through mass removal, depopulation, acculturation, and racial intermixture by the early part of the 19th century.

CONCLUSIONS AND INTERPRETATIONS

The Islands of Mexiana and Caviana produce archeological remains that suggest that they were not occupied constantly or intensively by ceramic-producing cultures until just prior to European times. By contrast, the cultural sequence on Marajó is long and even that in the Territory of Amapá acquires some semblance of antiquity (fig. 205). The failure of these islands to be permanently inhabited by earlier cultures of the Tropical Forest Pattern, or, to put it another way, the failure of the Tropical Forest Pattern to diffuse to Mexiana and Caviana, cannot be explained by present archeological evidence. It is probable that they were not uninhabited, and this assumption gains some support in the fact that the Mangueiras Phase did not expand over Caviana after it had gained a foothold but instead withdrew again to Marajó. However, no direct evidence of any preceramic or nonceramic inhabitants appears to have survived.

The earliest ceramic-producing Phase that can be given a specific temporal position in the Mexiana and Caviana sequence is the Mangueiras Phase, which is represented by one site on southern Caviana. C–3—Porto Real belongs to the beginning of this Phase, and is the only Mangueiras Phase site not located on the Island of Marajó. It appears to indicate a brief and unsuccessful attempt by the culture to expand to another island. The subsequent history of the Mangueiras Phase is confined to Marajó and has been discussed with reference to the chronological sequence there (pp. 407–408).

Of the two remaining Phases on Mexiana and Caviana, the Aruã Phase is established as the latest by the presence of European trade goods at all but the earliest sites and by documentary evidence throughout the colonial period. There is no similar evidence that the Acauan Phase was also in existence at this time. The major site, M–3—Acauan, is surrounded by Aruã Phase habitation and cemetery sites, and the avoidance of some kind of contact would have been impossible. Neither Phase shows any ceramic evidence of contact with the other, however, nor are any European objects associated with the Acauan Phase remains.[35] The only conclusion is that the Acauan Phase is pre-Aruã Phase. More specific evidence of its temporal position in the archeological sequence at the mouth of the Amazon is not provided by stratigraphy and must be derived from the analysis of possible relationships between Acauan Phase pottery and ceramic features of the other archeological Phases in the region. Among the distinctive Acauan Phase traits that can be used for comparison are corrugation, excision, incision, and unusual vessel shapes.

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[35] The two examples of European pottery from M–3 are modern, dating within the last 100 years.

Corrugation.—Sherds with surface treatment resembling corrugation came from sites of the Mangueiras Phase (C–3 and J–13), of the Formiga Phase (J–4 and J–6), and of the Aruã Phase (J–2/3 and M–7). Except for Mucajá Corrugated of the Formiga Phase, these were too nondescript and infrequent to be handled as pottery types. Careful inspection of the sherds indicates that the majority fall into different categories of corrugation than Floripes Corrugated of the Acauan Phase. The examples from the Formiga and Aruã Phases represent finger punctation or pinching of the semismoothed surface (pls. 48, *a–h*, 112, *a–f*) rather than the manipulation of the surface of each coil as it is added, which characterizes true corrugation. One sherd from the Aruã Phase (J–2/3) and 14 sherds from the Mangueiras Phase (C–3), however, do resemble Floripes Corrugated. Since the Acauan Phase appears to have been of short duration in the area, and since these two Phases are respectively the latest and the next to the earliest in the island archeological sequence, it is not likely that both could have learned the technique of corrugation by Acauan Phase contact. Before attempting to decide whether either could have been so derived, it is better to consider other evidence which may have bearing on the conclusion.

Excision.—Excised decoration is typical of the Marajoara Phase and four sherds in this technique came from one early Mangueiras Phase site (C–3). Although the paste differs, some vessel shapes and some of the design motifs of Acauan Excised, as well as the technique with which they are produced, are very similar to those of Ararí Plain Excised of the Marajoara Phase. Open, shallow dishes or bowls are common to both Acauan Excised and Ararí Plain Excised and both types utilize a high percentage of externally thickened, everted rims, but otherwise specific resemblances in shape do not exist. The most striking correspondence is in decoration. The designs, layouts, and motifs of Acauan Excised are typical of the classic excision of the Marajoara Phase even to such details as spirals, curvilinear units, "eyes" surrounded by curvilinear and rectilinear designs, steps, alternating bands of cut and uncut areas with incised borders, etc. (pls. 90, 91). Although the most frequent technique of excision in Acauan Excised is a sort of pecking, the gouging out or scraping away and cutting back the field evenly also occurs, and both these techniques compare exactly to those methods used in the Marajoara Phase. In the latter Phase gouging-out is more common in Ararí Plain Excised while the even cutting back is more frequent in Ararí Red Excised. The Acauan Excised pottery, however, lacks the highly complex variations of slipping, double slipping, and white retouch found in the Marajoara Phase.

Excision is not a typical method of decoration in the Mangueiras Phase. Of the 4 sherds from C–3—Porto Real, 2 came from miscellaneous diggings and the surface of the site, 1 came from level 8–16 cm. of cut 1 and one from level 16–24 cm. of cut 2. None of the sherds exceeded 2.5 cm. square and hence no indication of vessel size, rim form, or details of design motif are available; nevertheless the four specimens probably represent four different vessels. The technique of excision is similar to the most common variety from Acauan, a type of pecking and digging out instead of cutting back and gouging out, with the exterior surface smoothed and slightly floated before excision. With such small specimens and so few in number, it is difficult to make specific comparisons; however, the technique of excision seems to resemble more closely Acauan Excised from M–3—Acauan than it does any of the excised pottery from the Marajoara Phase.

Incision.—The three earliest sites of the Mangueiras Phase (J–5, C–3, and J–17) produced sherds with well-executed, fine, and broad incised lines which resemble in technique the Carobal Incised of the Acauan Phase. Designs utilizing zones filled with fine lines and outlined by broader incisions are typical of Carobal Incised (pl. 92, *a* and *c*) and also occur in the Unclassified Decorated from J–5 of the Mangueiras Phase (pl. 47, *j*). Notable in the incised examples from both Phases is a lack of standardization in motif or execution, which contrasts to the situation in nearly all the other decorated types distinguished from the mouth of the Amazon.

Vessel shape.—A distinctive vessel shape of the Acauan Phase is a bowl with an internally thickened rim with a broad, flat, horizontal or slightly insloping top. This form is represented by Piryzal Plain shapes 1 and 2, Acauan Excised shape 1, and Carobal Incised shapes 2 and 3. A similar rim and vessel form occurs in the Mangueiras Phase in Mangueiras Plain shapes 7 and 8 and Esperança Red shape 1, all of which are typically early forms. Ornamental lobes on the rim or an undulating lip are common methods of decoration on Acauan Phase pottery and these also occur in the early part of the Mangueiras Phase (J–5, J–17, and C–3).

In this analysis, the Acauan Phase appears to have possible affiliations with two of the other Phases at the mouth of the Amazon. The resemblance between motif and technique of execution of Acauan Excised and the excised types of the Marajoara Phase is striking. On the other hand, early sites of the Mangueiras Phase have produced sherds with corrugated, excised and incised treatment that suggests

Acauan Phase types, and bowl rims of a common Acauan Phase rim form. Since none of the other Phases show any comparable degree of resemblance either in frequency of the trait or in fidelity of comparability, the problem of affiliation can be reduced to these two. Since the Acauan Phase appears to have been of short duration in the area, and the early Mangueiras Phase (which produces the strongest resemblances) is separated by a considerable time interval from the Marajoara Phase, it does not seem probable that both could have had direct contact with the Acauan Phase during its existence locally. A decision as to which may have had direct contact with the Acauan Phase is important because of the implications it has for the temporal position of this Phase.

At first glance, it seems unquestionable that the closest affiliation is with the Marajoara Phase. The excised designs of Acauan Excised are so closely similar to those on Marajoara Phase types as to preclude completely any possibility of independent derivation. However, the assumption of sufficiently close and prolonged contact in this region for one of these Phases to have learned the detailed technique from the other raises unanswerable questions. There is abundant evidence that both Phases produced skilled potters who were competent in several elaborate decorative techniques. Why, then, was excision the only one exchanged? Why are the Acauan Phase excised designs always on a plain surface, whereas the Marajoara Phase employs single and double slips as well? Why did the Acauan Phase potters not copy Joanes Painted, which is by far the most common Marajoara Phase method of ornamentation? Why do no corrugated sherds appear in the Marajoara Phase when this is the most frequent Acauan Phase decorated technique? And further, why are artificial mounds, urn burial, tangas, pottery stools, and other striking Marajoara Phase traits completely absent from Acauan Phase sites? Conversely, why have no pottery stamps come from sites of the Marajoara Phase? If there was local contact sufficient to explain the similarities in excised style, then the failure of any of these other features to be exchanged is unaccountable, except in one possible way. By the last part of the Marajoara Phase many of the outstanding ceramic features had been lost or reduced to minor proportions. Ararí Plain Excised was the most frequent variety of excision and contact at this time could account for the adoption of this variety alone by the Acauan Phase potters. The fact that pottery making was no longer a specialized art might explain why a new technique like corrugation was not accepted in the Marajoara Phase. Painting and tangas were still much in use, however, as were artificial mounds and urn burial and their failure to influence the Acauan Phase remains a puzzle. Furthermore, the existence of the Acauan Phase on Mexiana Island during or following the termination of the Marajoara Phase is not in accord with other evidence. A few excised sherds from the early Aruã site of M–2—Papa Cachorro are of Marajoara Phase origin, and seem to indicate some direct contact or trade between the two groups. If the Acauan Phase had been extant on Mexiana at this time, there would surely be some comparable evidence in the way of trade materials of either Marajoara Phase or Aruã Phase origin. However, there is none.

There seems to be only one solution to this paradox of the unquestionable affiliation between the excised traditions and the equally definite but negative evidence of any other similarity between the two cultures, ceramically or otherwise. That is that the Marajoara Phase and the Acauan Phase acquired the knowledge of excision from the same source, perhaps at about the same time, somewhere else in South America. Thereafter, the two groups led an independent existence and ceramic evolution followed a different path, even in regard to the excised style. In the Marajoara Phase gouging out and scoring became the typical techniques, and varying effects were produced by the use of different colored slips. In the Acauan Phase, the most common method of cutting back the excised areas was pecking, and slips were never used. The design motifs did not alter drastically, perhaps because they are well suited to the demands of this technique. Although this reconstruction seems to employ a double coincidence—an early contact in a remote area and a later migration to the same part of the lower Amazon—this is not out of line with other indications of widespread migration and diffusion in northern South America (fig. 206). Although the evidence so far discussed may not seem conclusive in discounting direct contact between these two Phases at the mouth of the Amazon, one further consideration makes this seem out of the question. This is the occurrence of Acauan Phase features on the pottery of the early Mangueiras Phase.

The most varied representation of Acauan Phase pottery types appears in early sites of the Mangueiras Phase. Certain similarities are outstanding. A few sherds from C–3—Porto Real closely resemble examples of Floripes Corrugated. Four other sherds from the same site display a technique of excision comparable to Acauan Excised. Unclassified Decorated sherds from J–5, J–17, and C–3 cannot be distinguished by technique or motif from Carobal Incised. Finally, the typical bowl form of the Acauan Phase, with an interiorly thickened, flat-topped rim and a lip ornamented with lobes or an undulating edge, occurs frequently at J–5 and J–17. All of these occurrences are unexplainable as independent inventions in the Mangueiras Phase, not only because of their sparsity and infrequency, but because of their degree of similarity to the Acauan Phase appearances. Furthermore, the Mangueiras Phase can be shown to be highly receptive to ceramic influences by an examination of the acculturation that it underwent after contact with the Ananatuba Phase (pp. 218–220). The rapidity with which Ananatuba Phase methods of decoration (brushing and incision) and vessel shapes (figs. 73, 74) were adopted even in distant villages of the Mangueiras Phase is striking. This was a completely one-way proposition, however, and there is no evidence of Mangueiras Phase influence on the pottery of the Ananatuba Phase.

All of the details surrounding the contact of the Mangeiras Phase with the Ananatuba Phase are duplicated if we conclude that the earlier florescence of decoration is the result of contact with the Acauan Phase. Both decorative techniques and vessel shapes were copied. In both cases, incision was the major technique of ornamentation involved. It is conceivable that the corrugated and excised sherds are from trade vessels rather than Mangueiras Phase efforts at duplicating the technique. This cannot be demonstrated conclusively by examining the paste because of the similarity between Mangueiras Plain and Piryzal Plain which is increased by differential factors of preservation in moist or dry soil conditions. One interesting implication stemming from the conclusion that there was contact between the Mangueiras Phase and the Acauan Phase on the islands is that Pocoató Scraped and Paciencia Scraped, which have been considered unrelated, may also be traced to a common origin. Borrowing from the Acauan Phase would explain the fact that Pocoató Scraped appears in a very low percentage at the beginning of the Mangueiras Phase and thereafter becomes more abundant (fig. 72). The failure of these "borrowed" features to remain long a part of the Mangueiras Phase ceramic complex is paralleled in the more easily measured history of traits adopted from the Ananatuba Phase. This suggests that the Mangueiras Phase potters were eager for new ideas, but once the stimulating source was removed interest was readily lost.

In reviewing the evidence of Acauan Phase contact provided by the Mangueiras Phase and the Marajoara Phase, the former case seems far the stronger. Not only are all the major Acauan Phase pottery features represented, but there is parallel evidence of a similar kind of ceramic acculturation in the later history of the Mangueiras Phase. Furthermore, there are no loose ends unexplained. Marajoara Phase similarity is restricted to excision on a plain vessel surface, and all of the other numerous and complex features of both cultures are different. If we were to propose a direct connection, not only is this situation incongruous, but then the Mangueiras Phase similarities become equally puzzling. The difficulties are compounded and little is explained.

The most probable conclusion on the basis of present knowledge is that the Acauan Phase arrived at the mouth of the Amazon approximately at the same time as the Mangueiras Phase. There was sufficient contact to produce the influences noted on Mangueiras Phase pottery. Both the short duration represented at M–3—Acauan and the restriction of evidence of influence to the earliest part of the Mangueiras Phase suggest that the period of Acauan Phase occupation of the islands was short. The reason for this is not supplied by present archeological evidence, and the subsequent history of this Phase is equally unknown.

There are several promising clues to follow in attempting to determine the origin and affiliations of the Acauan Phase. In addition to the techniques of excision and corrugation there is an unusual ceramic artifact in the form of a circular, convex-surfaced stamp attached to a handle. The tracing of the distribution of these traits leads us far and wide over the continent of South America.

The distribution of excision has been reviewed in connection with the Marajoara Phase (pp. 413–414), and only one occurrence is worthy of repetition here because it is associated with other Acauan Phase traits. This is the small collection from Oriximiná, at the mouth of the Trombetas, which includes one modeled and excised sherd and two sherds with parallel, zigzag lines similar to Vergal Incised of the Acauan Phase, among the more abundant modeled adornos frequently reported from this part of the Middle Amazon (pl. 88, *a-d*). Unfortunately, this site has not been excavated stratigraphically, nor is it represented by an unselected sample, so the relative abundance of the various types of decoration represented is not known. No corrugated sherds have been reported from this area, so if this is the path along which the Acauan Phase came, the introduction of corrugation must have come at a later time.

In attempting to trace the source of this influence, we find that corrugated pottery is widespread in eastern and southeastern South America. It is reported from coastal and southern Brazil, Paraguay, Uruguay, and the northern part of the Argentine, in other words in the area known to have been occupied historically by the Guaraní Indians. Numerous collections from individual Guaraní archeological sites have been made (Métraux, 1948 a, pp. 73–75; Baldus, 1951–52) but as yet no thorough investigations or excavations have been made of the entire Guaraní problem. Two or three features distinguish this pottery, but the only point of interest here is a ware called "corrugated" or "fingernail impressed." In many cases the corrugation is almost totally erased by a smoothing over, and in other cases the decoration is very crude; however, some individual examples resemble quite closely the technique of Floripes Corrugated (cf.

Métraux, 1948 a, pl. 11, top; Baldus, 1951–52, Tafel I, II). However, this similarity is limited to technique. There is not a single vessel or rim shape of Guaraní pottery that even vaguely resembles any of the forms of Floripes Corrugated or, as far as that goes, the vessel forms of any pottery types of the Acauan Phase. If the interpretation of the temporal position of the Acauan Phase at the mouth of the Amazon is correct, this is several hundred years prior to the arrival of Guaraní tribes in this area from the south. This fact alone would not rule out the possibility of some common southern origin for the two groups. However, none of the other Acauan Phase excised or incised styles seem to occur in association with Guaraní corrugated pottery, and other Acauan Phase affiliations seem to eliminate the possibility of such a derivation. Although the corrugated technique may turn out to have a single origin in South America, there does not seem to be a direct connection between its presence on Guaraní ceramics and in the pottery of the Acauan Phase.

The only other feature of the Acauan Phase of possible use for comparison is a pottery stamp (fig. 157). The circular, convex-surfaced head attached to a conical handle so that it fits firmly into the hand forms a distinctive unit that is easy to discriminate from other types of stamps. The varieties of roller stamps, flat disks, rectangular or circular stamps with diminutive handles that can be held only with the finger tips coming from sites in Mexico, Central America, and northwestern South America can be eliminated from primary consideration as having no direct relationship to the stamp from Acauan. Although disks without handles or with stylized modeling on the reverse, as well as cylindrical forms, occur in the Antilles (De Booy, 1915, figs. 27–28 and pl. 9; Krieger, 1931, pl. 35, Nos. 1–5), stamps of the Acauan Phase type also appear to be common there. A complete example (fig. 202, *c*) and a fragmentary one were excavated from the midden of Andres, Dominican Republic, by Krieger (1931, pl. 36 center top) and another stamp of the same style is reported from the same part of the island by Fewkes (1907, pl. 86 b and b′). The complete specimen is identical in shape to the one from the Acauan Phase, but is slightly smaller, the former being 5.1 cm. long and 5.0 cm. in diameter, while the latter is 7.0 cm. long and 6.2 cm. in diameter. The designs are different but both are on a disk-shaped, convex surface. The stamp head illustrated by Fewkes shows the point of attachment where a handle has been broken off. The disk is 6.4 cm. in diameter and has a pattern of concentric circles (fig. 202, *b*) that is more comparable to the design on the Acauan Phase stamp (fig. 202, *a*) than are the other examples just described. However, the regularity of form and high caliber of workmanship it reveals are not duplicated in the Acauan Phase specimen.

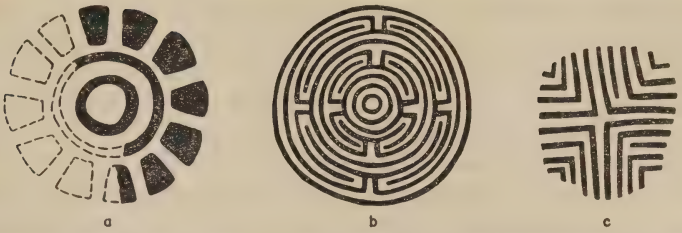

Figure 202.—Designs made by pottery stamps. *a,* Mexiana Island, Acauan Phase. *b,* Dominican Republic (USNM No. 220595). *c,* Dominican Republic (USNM No. 349393).

Discoidal stamps occur frequently in Puerto Rican collections according to De Hostos (1919, fig. 51, i-n), who illustrates six fragmentary ones. The faces are described as 7 to 9 cm. in diameter (op. cit., p. 392) and bear crude incised and punctate designs. Another fragment of a stamp having a disk end decorated with incised concentric circles is reported by Rouse (1952, pl. 10, b, and p. 360) from the site of Llanos Tuna on the west coast of Puerto Rico.

Occasional reports suggest that the other islands of the Antilles may also produce stamps of this style. Roth (1924, pl. 33, B) shows one from the Grenadines with a conical handle and a simple design of deeply incised lines on the convex head. A similar specimen is reported by Fewkes (1914, p. 215) from Trinidad.

While it has been suggested that these stamps were used for the decoration of pottery vessels (Krieger, 1931, p. 158), the authors agree with De Hostos (1919, pp. 390–392), Rouse (1948, p. 508), and Loven (1935, p. 651), who conclude that their function was imprinting designs on the skin. This interpretation is supported by the theoretical consideration that the convex surface of the stamp is poorly adapted to imprinting designs on the convex surface of a vessel and by the practical consideration that no sherds with stamped designs have been found in the Antilles. The convex surface is more in keeping with use on a flexible medium like the skin, and in fact was found by experiment to be very satisfactory for body painting. The designs produced by one convex and one flat stamp from Santo Domingo and by the stamp from Acauan are shown on figure 202. While there seems little doubt that the Acauan Phase stamp belongs to the same tradition as those from the Antilles, its occurrence at the mouth of the Amazon is rendered somewhat anomalous by the absence of any other similarities between the ceramics of the two areas.

The effort to establish the affiliations of the Acauan Phase by tracing the distribution of three distinctive features—corrugation, excision, and pottery stamps—leads us in three different directions from the mouth of the Amazon. Corrugation is found in the south, excision in the northwest, and stamps occur in the Antilles. As a result it is not only impossible to suggest a culture to which the Acauan Phase might be related, but it is also impossible to specify on the basis of comparative data the part of South America from which it might have come to the mouth of the Amazon. On the basis of ceramic criteria, including well smoothed surfaces on 85 percent of the sherds, degree of standardization of rims both in form and diameter, and a 35 percent occurrence of decorated types representing complex and competently executed motifs, the Acauan Phase must be considered as representing a culture more highly developed than the Tropical Forest Pattern. It appears to be an example of the same kind of intrusion that is attested by more detailed evidence in the Marajoara Phase. Judging from known archeological remains, however, a much smaller population movement was involved, and the people moved on before any noticeable deterioration in the culture had taken place. From where they came and where they went after leaving the mouth of the Amazon are important problems because of the bearing they have on the diffusion of corrugation and excision as techniques of pottery ornamentation in South America. It is to be hoped that future archeological work will bring the solution and so help to explain the now isolated occurrence of the Acauan Phase complex.

The Aruã Phase, the final group to invade the Islands of Mexiana, Caviana, and Marajó, has an immediate derivation on the adjacent mainland, now known as the Territory of Amapá. Here too, however, the culture is intrusive, as attested by the fact that it appears fully developed. In attempting to trace a more remote origin, we have a number of well-defined traits at our disposal. Characteristic of the early Aruã Phase, as represented on the mainland or at early sites on the islands, are stone alinements, polished stone celts, nephrite beads and amulets, pottery griddles, pottery drums, pottery figurines, and pottery decoration by applique, impressed rings, or punctates. An examination of the distribution of these features should provide a clue to the origin and affiliations of the Aruã Phase.

A number of structures, best described as stone alinements, have been reported from the Territory of Amapá (pp. 38–43). These have nearly all been badly disturbed by treasure seekers, but a few can be discerned to have originally been composed of irregularly shaped slabs of stone set on end to form patterns ranging from circles to a long straight row. The majority have little pottery associated, but what has been found is in most cases typical of the Aruã Phase and has led to the identification of these structures as of Aruã Phase origin. The absence of village or cemetery association suggests a ceremonial usage.

No similar structures have been reported on the mainland south of the Rio Araguarí or in the Amazon Valley. There are descriptions, however, of stone alinements in the vicinity of the Ireng River, where the boundary of Brazil joins British Guiana. Several located near Korona Village in the Pakaraima Mountains are described by Henderson:

> Just outside the village we came on the remains of an undoubted stone circle, about one hundred feet in diameter. Slabs of porphyry about two feet in length were placed upright in the ground, but many of them had been knocked over. We were told of the existence of two more of these circles in a much better state of preservation, one on the Brazilian side of the Ireng River near Korona Falls, and the other on the Brazilian side of the border, but not far away. [Henderson, 1952, p. 63.]

Other alinements are reported from the same general region by another geologist, C. Barrington Brown:

> After leaving Itabay . . . we went . . . up a steep hill, through a wooded country, to a small open-wooded plain. In the center of this opening there was a circle of upright slabs of greenish felstone porphyry, through the center of which the path led. The slabs were from two to three feet in height, and some five or six feet apart, placed in a true circle of about thirty feet in diameter. They had not been dressed, but their forms resulted from the manner in which they split up on weathering, and they are portions of the rocks of the neighborhood. On one was a frog-like figure, cut in deeply . . . . [Brown, 1876, pp. 144–145.]

The present day Indians of British Guiana have no information about these structures (Henderson, 1952, p. 66) and no others have been reported in British Guiana (Evans and Meggers, MS.). Although Gillen (1948, p. 823) states that Chaffanjon found stone alinements on the Cuchivero River, a tributary of the Orinoco, a check of the primary source (Chaffanjon, 1889) does not corroborate this information. No other accounts describe stone alinements of the Aruã Phase type in any part of Venezuela.[35a]

Ceremonial structures of considerable variety occur in the West Indies. While the most frequent type consists of earthworks faced with stone, a few are more reminiscent of the Aruã Phase alinements:

> Ceremonial structures are common in Arawak sites. Most of them consist of large flat areas alongside the refuse deposits, either circular, oval, or rectangular in shape and lined with embankments, faced in some cases with upright stone slabs. These are called "ball courts," although many of them may have served primarily as ceremonial plazas, and several are so long and narrow as to resemble roads. Some are accompanied by walks paved with flat stones and others by megalithic columns known as "pillar stones." Petroglyphs are common, occurring on the slabs lining the ball courts, on the pillar stones, on boulders near streams, and on the walls of caves. [Rouse, 1948, p. 507.]

[35a] In a survey of the Rio Orinoco between Puerto Ayacucho and San Fernando de Atabapo in February–March 1957, two single stones were found by the authors and José M. Cruxent that appear to be part of this stone alinement tradition.

Two alinements in the Dominican Republic, in which the stones are arranged in a circle like those in British Guiana have been described by Krieger:

> . . . near the headwaters of the Chaquey . . . a circle of upright stones 300 feet in diameter surrounds a flat space overlooking the valley of the river. Two entrances to this court are placed at opposite sides of the circle. At the exact center stands a plain stone pillar 2 feet in height. A similar circle had been erected by the Arawak at what is now known as San Juan de Maguana in the Province of Azua. [Krieger, 1931, p. 46.]

Aruã alinements tend to be located on elevated spots, and this is often the case with Antillean structures, particularly those that cannot be clearly identified as ball courts. Although no petroglyphs are associated with the stones in the Territory of Amapá, one was mentioned on an alinement in British Guiana. These similarities make it seem possible that the Aruã Phase alinements are a simplified version of the ceremonial complex associated with the Arawak of the Antilles.

This conclusion is considerably strengthened when one examines other aspects of Aruã Phase culture. The polished stone celts and axes, although not so well finished or so symmetrical as those from the West Indies (Krieger, 1929, pl. 5), are more closely related to the latter than to axes from other parts of the Amazon, where parallel sides and deep notches are more characteristic (Barbosa Rodrigues, 1876–78, pt. I; Loven, 1935, pp. 135–210). Nephrite beads of tubular and disk shape were recovered from Aruã Phase cemeteries, and this material appears to have been frequently used in the Antilles, although few reports make specific mention of the type of stone employed in beads. Krieger (op. cit. p. 71) states that "cylindrical beads of chalcedony, greenstone, and other hard stones . . . are found on all the Greater Antilles." Rouse (1952, p. 537) speaks of a site on Puerto Rico which was "visited many times by people seeking the greenish stone beads and pendants which are plowed out of its soil . . .", and dates it ceramically as belonging to his Period IIIa. Small amulets of stone with a perforation for suspension are also frequent, and although the carving is typically more elaborate, it is not difficult to see a resemblance between the most realistic of our vulture-head pendants (fig. 188, *a*) and the vulture head on an amulet from Trinidad (Fewkes, 1907, pl. 46).

Turning from stone to pottery, a few other correspondences can be discerned. One of the most striking of these is the resemblance between a figurine illustrated by Krieger (1931, pl. 55, right) from an Arawak site in the Dominican Republic and the one excavated by us in the Aruã cemetery of C–12 on Caviana Island (fig. 183, *a*). The shape, size, and execution of the features are very much alike. The Antillean figurine is part of a complex that ranges toward both simpler and more complex examples (ibid.). Although some are identified as pestles, none appear to show any wear from such use, which is also true of the Aruã Phase specimens.

The total ceramic complex associated with Arawak remains in the Antilles shows little resemblance to the pottery of the Aruã Phase. Vessel shapes are more elaborate and incised decoration is characteristic. One vessel shape, however, is shared and that is a flat pottery platter or griddle. The Aruã Phase is the only culture at the mouth of the Amazon that produced this vessel shape, and one of its typical features is an interiorly thickened or upturned rim edge ornamented with impressed rings or punctates. A vessel illustrated by Rouse (1942, pl. 4 B) is almost an exact duplicate of the Aruã type (fig. 195), having the same interiorly thickened rim and row of punctates. It comes from El Mango, a Sub-Taino site in Cuba.

Ornamentation is far more frequent on Antillean pottery than in that of the Aruã Phase, which is distinctive among the cultures of the mouth of the Amazon in its paucity of ornamentation. Applique is the most common Aruã type, with the ribs often embellished with punctates, nicks, or impressed rings (pl. 108, 109). Impressed rings are also frequent on the necks of burial urns. Applique ribs are often found on Meillac pottery from Haiti (Rouse, 1941, pls. 11, 12) and frequently have punctate decoration. A row of impressed rings or punctates is also employed around the vessel below the rim in this culture (op. cit., pl. 13, figs. 8, 10, 12, 14). Other features of Meillac ceramics are not duplicated in Aruã Phase pottery.

In summary, the Aruã Phase appears to share with Arawak cultures of the West Indies a complex of traits that includes stone alinements, polished celts, nephrite beads, and amulets, crude pottery figurines, platters or griddles, and applique and punctate methods of pottery decoration. In the Greater Antilles these traits are widespread and developed to varying degrees. Rouse, who has conducted extended field work in the Greater Antilles, has been able to reconstruct the cultural sequence on the various islands in considerable detail (Rouse, 1951). An examination of the resemblances just cited within his temporal frame of reference permits a better evaluation of their significance.

Rouse divides his time scale into four main periods, of which only the last two concern us here. Except in western Cuba, these two final divisions correspond to a cultural division between Sub-Taino and Taino, Period III being equivalent to Sub-Taino and Period IV to Taino. Where specific identification of Aruã Phase traits has been possible, they appear to be with Antillean sites and cultures of Period III. This is true of pottery decoration and platter shape. Greenstone beads also occur in Period III. No ceremonial structures are associated with the first part of this period, but several ball courts are identified in Puerto Rico as Period IIIb. Stone amulets also begin to appear at this time (op. cit., p. 257).

The simplicity of the stone alinements and the nephrite amulets or pendants of the Aruã Phase, as well as their atypical form in comparison with the well-developed ceremonial complex of Period IV in the Antilles, strengthens the conclusion that the relationship is with the Sub-Taino, rather than the Taino, and possibly dates from the latter part of Period III. An examination of the absolute dates derived by Rouse (op. cit., p. 251) on the basis of refuse accumulation shows Period IIIb to have lasted from A. D. 1317–1437. Using a different method of estimation, we arrived at a date between A. D. 1300 and 1400 for the arrival of the Aruã at the mouth of the Amazon River. Although admittedly approximate and derived in both cases by somewhat arbitrary procedures, the reliability of these dates is strengthened by the fact that the only two cultures showing any notable degree of resemblance—the Sub-Taino of the Greater Antilles and the Aruã of the mouth of the Amazon—turn out to be contemporary.

There are sufficient differences between these two cultural complexes to argue against any direct transfer of the Aruã from one of the Greater Antillean Islands. The absence of shell artifacts, which are characteristic of the latter, can be explained by the absence of suitable raw materials in the Lower Amazon. Other differences, including the absence of common Antillean vessel shapes and incised decoration in Aruã ceramics, and the absence of secondary urn burial (except for an occasional child's grave) in the Antilles suggest that the relationship is more in the way of a common origin. In Rouse's reconstruction (op. cit., p. 259), Period III is marked by the expansion of the Arawak from the Lesser Antilles and Puerto Rico into the Greater Antilles. It is possible that in addition to this major movement north and west, some Arawak also moved back to the mainland and down the coast, accounting for the Aruã Phase at the mouth of the Amazon. This hypothesis explains the failure of this complex to be more widespread in northern South America, as would be expected if it had developed on the mainland. More light may be shed on its reliability when field work is carried out in the Lesser Antilles, which are now little known archeologically.

An early Aruã Phase trait that appears to have no parallel in the Antilles is the pottery drum. Two specimens, one nearly complete and one fragmentary (pl. 111, *b-c*), have been recovered from early sites on Mexiana (M–7 and M–8) identified as Aruã Phase habitations. If these are indeed drums, then one must look for comparable objects to Middle America, where they are reported from Panama, Costa Rica, Nicaragua, and Maya sites in the Department of Peten, Guatemala (Lothrop, 1950, p. 48). Since the form is to some extent dictated by the usage, it is possible that the general resemblance between these examples and those of the Aruã Phase is accidental. This is further suggested by the fact that no other Aruã Phase features seem to be related to the western part of the Circum-Caribbean area.

After their arrival at the mouth of the Amazon, the Aruã occupied successively the mainland coast (Territory of Amapá) and the adjacent islands. The cultural complexes in the two areas show two striking differences: (1) The presence of stone alinements on the mainland and their absence on the islands; and, (2) the presence of large urn cemeteries on the islands and their absence on the mainland. In the case of the stone alinements, a simple explanation can be found in the almost complete absence of suitable stone on the islands. The loss of the associated ceremonial complex is not necessarily implied because substitutes could have been constructed of perishable materials. The lack of urn cemeteries on the mainland is more puzzling. It is possible that this is simply a failure of reporting, but this does not seem likely in view of the numerous records of Aristé Phase cemeteries in spite of the fact that these are secreted in caves and underground chambers. It may be that secondary urn burial, which is a relatively minor method of disposal of the dead in the Antilles, became an important Aruã trait only after their settlement on the islands. More information is needed on the Aruã occupation of the Guianas before this problem can be answered satisfactorily.

The unusual abundance of well-polished stone axes and nephrite objects, and the sudden appearance of several new pottery features at C–9—Frei João, an Aruã Phase cemetery on Caviana, suggests a foreign influence on this site, which seriates in the middle of the island sequence. However, the attempt to trace the source does not give definite results. Hollow rims make their appearance here, and the vessels on which they occur are also superior in symmetry and workmanship to typical Aruã Phase wares. One hollow-rimmed bowl has a naturalistically modeled figure of a bird on the rim (fig. 187) which, in its sculptured simplicity, suggests certain Barrancas representations of human faces. Hollow rims, however, do not occur in Barrancas ceramics, nor do the small, flat-topped or flat-bottomed vessels (Piratuba Plain shape 8), which often have low relief decoration that gives the suggestion of being made with a stamp or mold (fig. 186, *a*, *b*). The only conclusion that can be given at this time is that there was an influence on the Aruã Phase at the time represented by C–9—Frei João, that this came from the north (suggested by the vulture-headed nephrite objects, the hollow rims, the naturalistic modeling) and that it was not sufficiently strong to cause a permanent modification on Aruã ceramics. Hollow rims turn up at one later site C–6—Croatasal (fig. 201), but naturalistic modeling never becomes a characteristic of Piratuba Plain.

Toward the latter part of the Aruã Phase, painting becomes an important method of pottery decoration. It is also typical of the Aristé Phase, which was a contemporary occupant of the northern part of the Territory of Amapá, and although not identical, the designs from the two cultures show some resemblance. Trade between the two areas existed in post-European times, and by that period the activity had become traditional. As reported by Caetano da Silva:

> They [the Cayenne Indians] have known from time immemorial and by tradition that there was in the middle of the mouth of the Amazon River an island much larger than that of Cayenne which the Portuguese, the Aroua Indians, inhabitants of that island, the French, the other neighbors and also the Galibis under the domination of the king had always called Hyapoc, where all the Indians of Cayenne had perpetually traded and trafficked; and that the natives of the aforementioned country of Hyapoc of the river Amazon had always had commerce without difficulty with the inhabitants of Cayenne and the Indians dependent thereon. [Caetano da Silva, 1861, para. 171.]

Although the archeological evidence does not substantiate the assertion that the Aruã inhabited the islands "from time immemorial," there are scattered ceramic indications of contact going back to the early period of their settlement. One of the most undeniable of these is a rim sherd of a typically Aristé Phase vessel shape (Aristé Plain shape 1) from the Aruã cemetery of M–5—Mulatinho on Mexiana Island. This situation, coupled with the artistic resemblances, makes it probable that the increasing emphasis on painted pottery decoration evidenced in both of these Phases has an interrelated history. The source of this technique is undetermined, however, and at the present time an equally good case can be made for either Phase as the initiator, or for an influence from an outside source.

The conclusion of the Aruã Phase brings us to the end of the archeological sequence at the mouth of the Amazon. After the initial, sporadic exploration and trading of the 16th century gave way to the 17th-century settlement and disputes over sovereignty, the aboriginal cultures began to disappear. The Aruã seem to have persisted in a relatively unacculturated state longer than the Indians of the Mazagão and Aristé Phases on the adjacent mainland, although evidence of European trade is found in almost all of the island Aruã village and cemetery sites. However, with the growth of the cattle industry, those Aruã who had not fled to the Guianas or who had not been transferred by the Portuguese to distant parts of the Amazon disappeared into the "melting pot" where they mixed with other racial and cultural ingredients to produce the modern resident of the area, the *caboclo*. As late as 1816, there are reported to have been 279 Aruã remaining at Rebordello on the eastern tip of Caviana, but it is not known how much of the aboriginal culture was still preserved (Nimuendajú, 1948, p. 197). By 1948, "the Indians" had become legendary people of the past, known to their modern descendants for two principal characteristics: they were not Christians, and they made better and stronger pottery than the modern *caboclos* can produce.

The sequence of culture on the Islands of Caviana and Mexiana and its probable affiliations can be summarized as follows:

1. Caviana and Mexiana appear to have been only briefly occupied by pottery-using or Tropical Forest Pattern cultures until just prior to the coming of the Europeans in A. D. 1500.
2. Although there is no positive evidence of preceramic groups in the area, the failure of pottery-using cultures on Marajó to expand permanently to these islands suggests the presence of nonceramic groups.
3. The only major pre-Aruã culture, the Acauan Phase, is judged to be contemporary with the early Mangueiras Phase on Marajó because of the presence of sherds of Acauan Phase decorated pottery types in these Mangueiras Phase sites.
4. The Acauan Phase is of very short duration at the mouth of the Amazon, and neither its origin nor its subsequent history can be traced at present.
5. In late pre-European times, the Aruã moved from the Territory of Amapá onto the islands and archeological evidence suggests that the most concentrated occupation was on Mexiana and Caviana, although historical documents also speak of the Aruã as one of the dominant tribes on Marajó.
6. Aruã culture shows numerous affiliations with Arawak remains in the Greater Antilles, and it is hypothesized that this reflects a minor movement into the Guianas contemporary with the major Arawak spread from the Lesser to the Greater Antilles.
7. Archeological evidence confirms archive reports of contact and trade between the Aruã and tribes of the Guianas during post-European times.

THE HISTORICAL AFTERMATH

CHRONOLOGY OF EUROPEAN CONTACT

There is only one date that the archeologists working in the vicinity of the mouth of the Amazon can hope to know precisely, and that is the year of the first European contact. Even that, however, is disputed. The man immortalized by history as the discoverer of Brazil is Pedro Alvares Cabral, who sighted land on the 22d of April, 1500. Nevertheless, at least three Spanish explorers, Alonso Ojeda, Vincente Yanez Pinzon, and Diego de Leppe, visited the same general area in 1499 and 1500. There is also the possibility that the first contact was considerably earlier, dating from the voyage of a Frenchman named Jean Cousin in 1488 (Reis, 1947, p. 31).

If the one date that might be expected to be known with certainty is thus in dispute, it might be predicted that the course of events in the centuries following would be equally obscure and contradictory. Such is indeed the case. The names of many soldiers, explorers, and traders have been recorded, often as recipients of royal concessions to explore and colonize the Amazon area, but rarely is there any information on where they went, what they accomplished, or whether they even went at all. When an unusual trip has been recorded, like the descent of the Amazon from Ecuador to Pará in 1637 by a handful of men, the information is disappointing. According to Acuña,

> The two Lay-Friers and the Souldiers were inquir'd of about their long and strange Voyage, but they were all eight of 'em so stupid, that they had made no particular Remark on anything. [Acuña, 1698, p. 34.]

Archive information is often so vague that there is ample room for disagreement on the location of many of the forts and on the dates of their initiation or abandonment. Some of the names recur in the accounts of different writers, but it is difficult to evaluate whether this is confirmation or merely repetition of material from a single source. The situation is equally uncertain regarding citations that occur in only one source. Transposition of names from one language to another results in confusion also, the most shining example of this being the Torrego-Taurege-Tucujú problem. The amount of conflicting testimony as to whether these settlements are synonymous or independent, whether they are on the Ilha de Gurupá or the mainland, whether they were destroyed in 1625 or founded in 1628, is astonishing. Where colonies are located on a map, or descriptively as along a certain river, the inaccuracy of the map and the long-since altered river names often reduce the location to a very rough approximation. The apparently fortuitous survival of some manuscripts mentioning small settlements or plantations leads to the suspicion that other, similar plantations have gone unrecorded.

In spite of all these difficulties and drawbacks, an effort to reconstruct the chronology of European colonization in the lower Amazon is a necessary prelude to an evaluation of the latter part of the archeological sequence. From the first, the Europeans came not only to see and to conquer, but to trade with the Indians. Their reports sometimes tell what they brought, and the appearance of these objects in the archeological sites links them with the post-European period. The chronology of contact should give some idea as to how long the Indian cultures could have survived in relatively unaltered form, how strongly they resisted the efforts of missionaries and colonists to draw them by persuasion or by force into the "new regime," how soon they succumbed to acculturation or to the newly introduced diseases.

The account that follows is a brief summation of the main events and type of activity engaged in by the Europeans from 1500 until the middle of the 18th century. A more complete listing is available in the chronological table (table U). A map (fig. 203) is included to aid in correlating the geographical distribution of the European colonies with that of the archeological Phases. These do not pretend to be definitive, but only to give some idea of the new conditions facing the peoples of the region as they emerged from the archeological into the historical horizon. There is little doubt, however, that the error exists primarily in omissions and that the European activity in the area was if anything even greater than the surviving records show.

TABLE U.—*Chronological sequence of European exploration and settlement*

Year	Event	Source
1488	Possible first contact of northeastern South America by a Frenchman, Jean Cousin.	Reis, 1947, p. 31.
1499	Spaniards Diego de Leppe and Vincente Yanez Pinzon visited the east coast of South America.	Ibid.
1500	Alonso Ojeda (Spanish) and Pedro Alvares Cabral (Portuguese) reported to have visited the Guiana coast.	Ibid.
1501–1604	Concessions of territory and authorization to explore the Amazon area granted to various individuals by Carlos V and Felipe II; none carried out.	Reis, 1947, p. 32.
1502–13	Portuguese exploration and trade on the northeastern coast of South America; João Coelho, João de Lisboa, Diego Ribeiro, Fernam Froes.	Ibid.
1541	Descent of the Amazon completed by Orellana	Braga, 1949, p. 18.
1546	Exploration of the lower Amazon and Guiana coast by João de Melo da Silva.	Braga, 1949, p. 14.
1553	Expedition to colonize the Capitania do Grão-Pará shipwrecked off Maranhão.	Braga, 1949, p. 19.
1583	French ships begin to enter the Amazon to trade with the Indians.	Braga, 1949, p. 21.
1596	Keymis explores the Guiana coast under Raleigh's order and is shipwrecked at the mouth of the Rio Araguarí.	Caetano da Silva, 1861, para. 399. Williamson, 1923, p. 85.
1597	Leonard Berry and Thomas Masham explore the Guiana rivers.	Williamson, 1923, p. 185.
1598	First Dutch expedition to the Guianas	Ibid.
1599	Dutch ships in ever increasing numbers reach the Guiana coast; trade assumes "large proportions."	Edmundson, 1903, p. 642.

TABLE U.—*Chronological sequence of European exploration and settlement*—Con.

Year	Event	Source
1599–1600	Founding of Dutch colonies of Nassau and Orange on the lower Xingú.	Williamson, 1923, p. 95; Edmundson, 1903, p. 642.
1604–06	Charles Leigh's colony on the Rio Oiapoque	Williamson, 1923, p. 185; Caetano de Silva, 1861, para. 16.
1607–09	French attempt to colonize the Rio Oiapoque	Harris, 1928.
1609 (?)	Michael Harcourt explores the Rio Araguarí	Caetano de Silva, 1861, para. 401.
1609	Robert Thornton explores the Guiana coast; Thomas Tyndall and William Clowel explore the mouth of the Amazon.	Braga, 1949, p. 23.
1609–12	Harcourt's colony on the left bank of the Oiapoque	Williamson, 1923, p. 185.
1610	Charles des Vaux explores the Tocantins	Braga, 1949, p. 23.
1610	Dutch plantations and forts in the region of Tapujussús (Tucujús) between the Rio Jarí and Macapá.	Braga, 1949, p. 23; Vianna, 1905, p. 229.
1610–11	Roe's exploration of the Amazon and Guianas	Williamson, 1923, p. 185.
(?)	Roe's establishment of a colony on the Amazon	Ibid.
1614	Dutch activities in the Oiapoque and at Cayenne	Ibid.
1615	City of Pará (Belem) founded by the Portuguese	Ibid.
1615	Dutch fort near mouth of Rio Gurupá	Vianna, 1905, p. 229; Edmundson, 1903, pp. 652–653 (Caetano da Silva, 1861, para. 41, says 1616).
1616–23	Adriansen's Anglo-Dutch settlement 6 leagues above the Rio Parú.	Williamson, 1923, p. 68; Reis, 1947, p. 34.
1616	Dutch at Cabo do Norte: 2 forts and 2 sugar mills	Pereira, 1904, p. 256.
1617	Edward Harvey plants a colony in the Oiapoque	Williamson, 1923, p. 185.
(?)	English fort at Cabo do Norte	Reis, 1947, pp. 37–39.
1619–	Subjugation and extermination of Tupinambá of Rio Tocantins for attack on Belém.	Braga, 1949, p. 61.
Before 1620	English and Irish settlers in the Amazon	Williamson, 1923, p. 186.
1620	North plants a colony at the mouth of the Rio Parú, after exploring up the Amazon to the Tapajóz.	Williamson, 1923, p. 96; Reis, 1947, p. 35.
1621	Establishment of the Dutch West India Company with exclusive franchise for trade on the Amazon.	Edmundson, 1903, p. 651.
(?)	Sapanapoca, an Anglo-Irish settlement on Ilha dos Porcos	Williamson, 1923, p. 93; Edmundson, 1903, p. 657.
1622–25	Gaspar Chillan's Irish settlement on the Amazon	Williamson, 1923, p. 96.
1623	Tilletille and Warmeonaka, English plantations on the Rio Cajarí.	Williamson, 1923, p. 93; Edmundson, 1903, p. 657.
1623	Dutch settlements on the Xingú and Ilha de Gurupá destroyed by the Portuguese under Luís Aranha de Vasconcellos and Bento Maciel Parente.	Williamson, 1923, pp. 95–103; Reis, 1949, p. 18.
1623	Portuguese found Fort Mariocay opposite former Dutch fort at Gurupá.	Williamson, 1923, p. 186; Edmundson, 1903, pp. 652–653.
1623	Irish colony of Torrego (Taurege) at the mouth of the Rio Maracapucu.	Vianna, 1905, p. 241; Braga, 1949, p. 65; Edmundson, 1903, pp. 657 and 661.
1624–25	Influx of English, Dutch, and Irish colonists	Williamson, 1923, p. 186.
1625	Dutch fort of Mandiutuba on the Xingú near Gurupá destroyed by the Portuguese.	Braga, 1949, p. 64; Vianna, 1905, p. 240; Reis, 1947, p. 42.
1625	Dutch colony established on the left bank of the Rio Oiapoque.	Vianna, 1905, p. 247; Caetano da Silva, 1861, para. 19.
1625	English settlements on the Rio Cajarí destroyed by the Portuguese.	Edmundson, 1903, p. 660.
1626	French colony on the Rio Sinamari	Caetano da Silva, 1861, para. 36.
1627	Dutch fort on the left bank of the Rio Oiapoque	Caetano da Silva, 1861, para. 20.
1627	Military expedition to the Tocantins	Reis, 1947, p. 50.
1628	Dutch settlement on the Island of Tucujú	Edmundson, 1903, p. 662.
1629	Tucujú settlement destroyed by the Portuguese	Ibid.
1629	Dutch-English fort of Philippe between the Rio Acauerapucu and Rio Matapí.	Vianna, 1905, p. 241.
1629	Fort Cumau established two and a half leagues south of Macapá by the French.	Vianna, 1905, p. 242.
1629	Torrego taken by the Portuguese	Reis, 949, p. 18.
1629	Establishment of an English colony, Pattacue, on the island of Tucujú.	Williamson, 1923, p. 125.
1630	French colony on the Conamana	Caetano da Silva, 1861, para. 50.
1631	Cumau taken by the Portuguese	Williamson, 1923, p. 187; Vianna, 1905, p. 242 (Caetano da Silva, 1861, para. 63 says 1632).
1631	Pattacue taken by the Portuguese	Williamson, 1923, p. 126.
1631	North's fort taken by the Portuguese	Reis, 1949, p. 18.
1631	Philippe taken by the Portuguese	Vianna, 1905, p. 241; Caetano da Silva, 1861, para. 51.
1631	Termination of Dutch trade in the lower Amazon	Edmundson, 1903, p. 663.
1632	Nheengaiba Indians of Marajó castigated by Feliciano Coelho.	Reis, 1947, p. 50.

TABLE U.—*Chronological sequence of European exploration and settlement*—Con.

Year	Event	Source
1634	French colony at Cayenne	Caetano da Silva, 1861, para. 63.
1635 (?)	Cametá founded	Braga, 1949, p. 67.
1638	Fort Desterro erected by the Brazilians	Caetano da Silva, 1861, para. 72.
1643	Shipwreck of Portuguese vessel on eastern Marajó Island	Ferreira Penna, 1885, pp. 109–110.
1643–44	Second French colony at Cayenne	Caetano da Silva, 1861, para. 87.
1644	First mission on Marajó Island (vicinity of Soure?)	Ferreira Penna, 1885, p. 110.
1646	Dutch colony near the mouth of the Rio Mayacaré; expelled by the Brazilians in the same year.	Vianna, 1905, p. 247 (Reis, 1947, p. 63 says located on Rio Araguarí and conquered in 1647).
1647	Anglo-Dutch colony on the upper Rio Cassiporé conquered by the Portuguese.	Reis, 1949, pp. 18–19.
1652–54	Third French colony at Cayenne	Caetano da Silva, 1861, para. 88.
1654	Aruã and Nheengaiba Indians on Marajó castigated by João de Bittencourt Muniz.	Reis, 1947, p. 51.
1654	Portuguese of Pará ascend the Rio Jarí and subdue the Indians.	Caetano da Silva, 1861, para. 83.
1654–64	Dutch colony at Cayenne	Caetano da Silva, 1861, para. 89–91.
1659	Peace treaty between the Portuguese and the Indians of Marajó.	Braga, 1949, p. 85.
1660	Brazilian fort on left bank of Rio Araguarí; ephemeral because of poorly chosen location.	Vianna, 1905, p. 248; Caetano da Silva, 1861, para. 84.
1685	Fort de Barra below Val de Cães, guarding the channel to Belém.	Vianna, 1905, p. 250.
1685	French at Cayenne invade Indian villages of Ilha de Gurupá to take slaves.	Reis, 1947, p. 73.
1686	"Tratado provisional" between French and Portuguese suggests Indian villages still numerous in the disputed (northern) part of the Territory of Amapá.	Reis, 1947, p. 197.
1688	Portuguese fort established on the left bank of the Rio Araguarí, on the west side of the mouth of the Batabouto.	Vianna, 1905, p. 248.
1688–1738	Santo Antonio de Macapá, erected on the site of the earlier Fort Cumau.	Vianna, 1905, pp. 243–245; Reis, 1947, p. 57.
1690	Portuguese king forbids his subjects to make war against the Indians of the Cabo do Norte, to avoid their allying themselves with the French.	Reis, 1947, p. 92.
1697	Desterro destroyed by the French, and also Toheré on the left bank of the Amazon at the mouth of the Rio Toheré.	Vianna, 1905, pp. 246–247.
1697	Forts founded at Obidos and at Almerim (Fort Parú)	Vianna, 1905, pp. 252, 262.
1701	Aruã uprising near Soure on Marajó	Nimuendajú, 1948, p. 196.
1702	Aruã and other tribes on Marajó castigated for killing of two missionaries.	Reis, 1947, p. 53.
1702	Aruã of the Rio Ganhoão removed to the Rio Urubú, farther up the Amazon.	Nimuendajú, 1948, p. 196.
1722–27	Aruã take the offensive against the Portuguese, with the aid of the French.	Ibid.
1723	Aruã seek refuge on the Oiapoque from the Portuguese at the mouth of the Amazon.	Reis, 1947, p. 132.
1751	More than 400,000 head of cattle on Marajó Island	Reis, 1947, p. 58.
1757	Aruã town at Chaves missionized by a Friar of Santo Antonio.	Municipio of Chaves records.
1764–82	Construction of Fort São José de Macapá at the site of the present town of Macapá.	Reis, 1949, pp. 50–51.
1784–98	All Indians between the Amazon and the Oiapoque removed to Belém by the Portuguese.	Nimuendajú, 1948, pp. 196–197.
1793	Last Aruã on Marajó (at Chaves) removed to the lower Tocantins.	Nimuendajú, 1948, p. 197.
1816	279 Aruã remaining at Rebordello, eastern Caviana; no Indians left on the other islands in the mouth of the Amazon.	Ibid.

Following the initial voyages of discovery, the Portuguese seem to have been the ones who pursued the exploration of the Guianas and the Amazon most actively. One historian lists several voyages between 1502 and 1513:

> . . . several Portuguese visited certain parts of these coasts, some charged officially to explore them, others with a commercial goal. Details are lacking on these voy-

> ages and it is only possible to cite a few names of explorers: João Coelho, in 1502 or 1503; João de Lisboa; Diego Ribeiro, killed by the Indians; Fernam Froes who was accompanied by the pilots Francisco Corso and Pero Corso. These last three were stopped by the Spanish at Santo Domingo after having traversed the north coast of Brazil south of the equator, and probably the mouths of the Amazon . . . [Rio Branco, *quoted in* Reis, 1947, p. 32.]

From this period until the last two decades of the 16th century there is little information. Although numerous concessions were granted by the Spanish kings, none were acted upon. It is recorded that Orellana completed his descent of the Amazon in 1541, and that in 1546 the lower Amazon and the Guiana coast were explored by Luiz de Mello e Silva, who encountered some of Orellana's men (Braga, 1949, p. 18). An expedition to colonize the Capitania do Grão-Pará in 1553 was shipwrecked off Maranhão (op. cit., p. 19). These were desultory efforts, however, the main concern of the Portuguese being the conquest and colonization of the Brazilian mainland from Maranhão south, and that of Spain, the wealth of Mexico and Peru.

Other European powers began to explore the resources of the Guianas and the Amazon toward the end of the 16th century. In 1583 French vessels started to frequent the area to trade with the Indians (Braga, 1949, p. 21). This was also the period of the beginning of Dutch interest. Edmundson describes the growth of the their operations:

> Dutch seamen first made acquaintance with the coast of Brazil, either serving on Portuguese vessels or through connivance of the Portuguese government, as early as 1580. Towards the end of the sixteenth century the scanty records that survive show us an ever-increasing number of ships from Holland and Zeeland making their way westward. Their first objective was the coast of Guinea; then crossing the Atlantic to Brazil it was their habit to creep along the shore, visiting the various river estuaries for the purpose of bartering goods with the natives, until they reached the famous salt mines of Punta de Araya, a short distance beyond the Orinoco. Having taken in a freight of this precious commodity, they returned home by way of the West Indian Islands. The well-known Zeeland merchant Balthazar de Moucheron was one of the first pioneers of this traffic, which already in 1599 had assumed large proportions. [Edmundson, 1903, p. 642.]

The English were also arriving. In 1596 Lawrence Keymis was sent by Walter Raleigh to explore the Guiana coast between the mouth of the Rio Araguarí and the Orinoco.

The first records of colonization date from the advent of the 17th century. Priority goes to the Dutch, who constructed two small forts called "Nassau" and "Orange" on the lower Xingú between 1599 and 1600. In 1604, the English planted a small settlement on the Rio Oiapoque under Charles Leigh, but the venture was not a success and the colony was abandoned the next year. During the following decade the French, English, and Dutch all attempted to

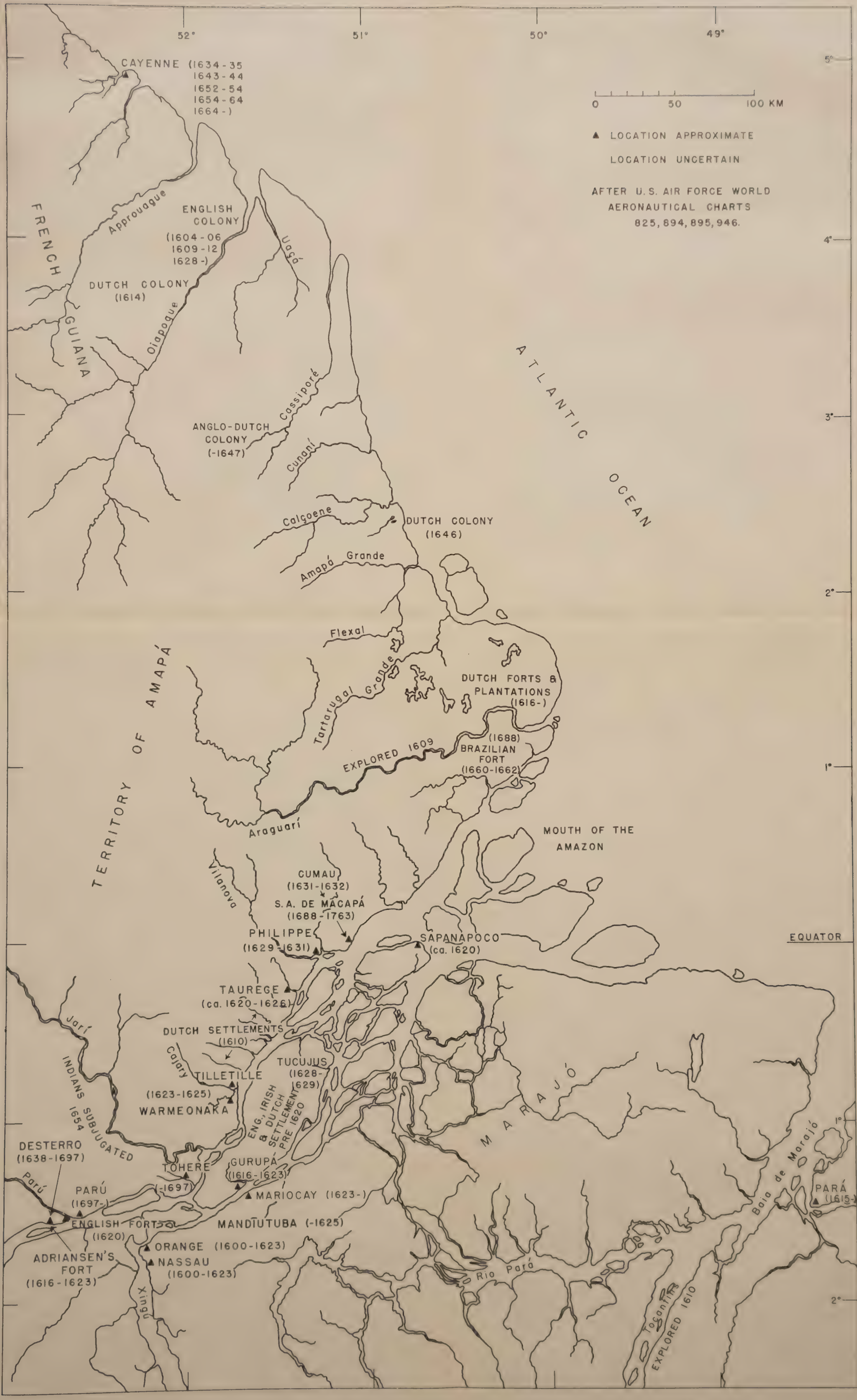
52°
51°
50°
49°
5°
4°
3°
2°
1°
1°
2°
EQUATOR
0
50
100 KM
▲ LOCATION APPROXIMATE
LOCATION UNCERTAIN
AFTER U.S. AIR FORCE WORLD AERONAUTICAL CHARTS 825, 894, 895, 946.
CAYENNE (1634-35 1643-44 1652-54 1654-64 1664-)
FRENCH GUIANA
Approuague
ENGLISH COLONY (1604-06 1609-12 1628-)
DUTCH COLONY (1614)
Oiapoque
Uaçá
ATLANTIC OCEAN
Cassiporé
ANGLO-DUTCH COLONY (-1647)
Cunani
Calçoene
DUTCH COLONY (1646)
Amapá Grande
Flexal
Tartarugal Grande
DUTCH FORTS & PLANTATIONS (1616-)
EXPLORED 1609
(1688) BRAZILIAN FORT (1660-1662)
Araguarí
TERRITORY OF AMAPÁ
MOUTH OF THE AMAZON
Vilanova
CUMAU (1631-1632)
S. A. DE MACAPÁ (1688-1763)
PHILIPPE (1629-1631)
SAPANAPOCO (ca. 1620)
TAUREGE (ca. 1620-1626)
Jarí
DUTCH SETTLEMENTS (1610)
Cajary
TILLETILLE
(1623-1625)
WARMEONAKA
TUCUJUS (1628-1629)
ENG., IRISH & DUTCH SETTLEMENT PRE 1620
INDIANS SUBJUGATED 1654
MARAJÓ
DESTERRO (1638-1697)
TOHERE
(-1697)
GURUPÁ (1616-1623)
MARIOCAY (1623-)
Parú
PARÚ (1697-)
ENGLISH FORT (1620)
MANDIUTUBA (-1625)
ADRIANSEN'S FORT (1616-1623)
ORANGE (1600-1623)
NASSAU (1600-1623)
Xingu
Rio Pará
Baía de Marajó
PARÁ (1615-)
Tocantins
EXPLORED 1610

FIGURE 203.—European forts and other settlements at the mouth of the Amazon prior to the middle of the 18th century.

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create a permanent settlement on the Oiapoque, with rather indifferent success.

By 1610 the Dutch had erected forts and plantations in the region between the Rio Jarí and Macapá (Braga, 1949, p. 23; Vianna, 1905, p. 229), and the English had established a colony on the Amazon under Roe (Williamson, 1923, p. 185). By 1615 or 1616, the Portuguese had founded the town of Pará (Belém) and the Dutch the fort of Gurupá, on the island opposite the modern town of that name (Vianna, op. cit., p. 229; Edmundson, 1903, pp. 652–653; Caetano da Silva, 1861, Para. 41; Williamson, loc. cit.). The Dutch also had two forts and two sugar mills in the vicinity of the Cabo do Norte (Pereira, 1904, p. 256). In 1620, North planted a colony at the mouth of the Rio Parú on the lower Amazon, after exploring as far as the Rio Tapajós (Williamson, 1923, p. 96; Reis, 1947, p. 35). About this time there was an Anglo-Irish settlement called "Sapanapoca" on the north end of the Ilha dos Porcos and a French traveler of 1623 reported two English plantations, Tilletille and Warmeonake, on the Rio Cajarí (Williamson, 1923, p. 93).

In addition to these settlements, there appears to have been some infiltration of Europeans among the Indians, where the former probably adopted the Indian pattern of life to a large extent. One source relates that:

> There was transported thither, Sixe yeares since [i. e. 1621] a Hundred persons, Gentlemen and others, who found that some of his Majesties Subjects, had lived safely amongst the Indians divers yeares before their comming: Many of these men are at this time remaining dispersed without government amongst the Indians, raunging about a spatious Country, and have learned the Languages of severall Nations . . .; These Indians also house them, worke for them, bring them victualls and commodities, . . . their payment is in glasse beades, Iron worke, or some such other like contemptible stuffe. [Anon., 1627.]

In 1623 the Portuguese began their campaign to oust the other European powers and to consolidate their own position in the region. In that year they destroyed the Dutch settlements on the Xingú and at Gurupá, and to insure permanent domination, founded Fort Mariocay opposite the former Dutch Fort of Gurupá, in the vicinity of the present town of Gurupá (Williamson, 1923, pp. 95, 103, 186; Reis, 1949, p. 13; Edmundson, 1903, pp. 652–653). The English settlements on the Cajarí were destroyed in 1625 (Edmundson, op. cit., p. 660), and the Irish fort of Taurege (Torrego) in the same area met a similar fate at about the same time (op. cit., p. 661). In 1631, the newly established English fort Cumau, 2½ leagues south of the present town of Macapá, was taken by the Portuguese, as well as the Dutch-English fort of Philippe between the Rios Anauerapucú and Matapí and the English colony on the Island of Tucujú (now Ilha Grande de Gurupá). These raids largely put an end to "foreign" activities in the lower Amazon. The French and English retired to the north, above the Rio Oiapoque, and what little trading the Dutch undertook was limited to the vicinity of the Cabo do Norte (Edmundson, 1903, p. 662).

Although they had accomplished the expulsion of their competitors, the Portuguese had plenty to occupy themselves in maintaining their supremacy. The Indians of Marajó were a source of much difficulty, aroused as they were by Portuguese mistreatment. Fearful of a real invasion, the government sent a troop of soldiers to subdue the Nheengaíbas, but the latter conducted themselves with such skill and cunning that the expedition returned in defeat to Pará.

The state of hostility was maintained for a decade and a half before conditions of expediency forced the government to take steps to end it. Word was received from Europe of preparations for new invasions of the Amazon, and the governor was ordered to prepare for and to prevent such attempts. Having finally learned that "he who has the Aruã and the Nheengaíbas on his side, holds the key to the Amazon," he was prepared to risk much to restore the peace. Father Antonio Vieira, at that time Superior of the Jesuits in Pará, offered the services of his organization as intermediary. A missionary was dispatched in August, 1659, to make the peace offer to the Nheengaíbas, and they, also weary of the fighting, accepted (Ferreira Penna, 1885, pp. 110–111). To prevent the reentry of other Europeans, forts were constructed at Desterro, near the mouth of the Rio Parú, in 1638; on the Rio Araguarí in 1660; and at the site of the earlier Fort Cumau, in 1688 (Santo Antonio de Macapá). After that, with few exceptions, the conflict over the boundary between Brazilian and French territory in the Guianas continued primarily on a verbal level.

By the beginning of the 18th century, the consolidation of the conquest was almost complete. An Aruã uprising in the vicinity of Soure was put down with a punitive expedition of 60 soldiers and 200 Indians, and some 200 captives were taken. To forestall similar incidents, the Aruã of the Rio Ganhoão on the north coast of Marajó were transferred to the Rio Urubú farther up the Amazon. Indicative of the effective dispossession of the Indians is the fact that by 1751, Marajó had already become established in cattle production, with more than 400,000 head (Reis, 1947, p. 58). Most of the Aruã migrated to Cayenne and the Rio Oiapoque, where the French aided and abetted their quarrel with the Portuguese. After trying by "royal decree" to bring the Aruã back, or to get the French to send them back, the Portuguese between 1784 and 1798 bodily removed all the Indians between the Amazon and the Oiapoque and deposited them at Belém. Although large numbers escaped and braved the danger to return to the Guianas, the resistance was broken (Nimuendajú, 1948 b, pp. 196–197).

For an evaluation of the effect of the European conquest on the native peoples, it is necessary to consider not only the times and places of the contact, but also the nature and extent of the relations between the two groups. In the lower Amazon, the Indians had a variety of opportunities to acquaint themselves with the newcomers, some of which they welcomed and others of which they resisted.

The earliest type of intercourse between the Europeans and the Indians was on the comparatively superficial level of exchange of material goods. Although commercial enterprise was carried on from the beginning of the 16th century, it consisted mainly of infrequent and brief encounters that would not have caused much interference with the aboriginal way of life. However, the fact that goods of European manufacture were available to the Indians from A. D. 1500 onward is of importance in the dating of the sites with contact materials. Unfortunately, there appear to be no records of the items used for trade before Harcourt's account of 1613, but several lists for the 17th century are sufficiently similar so that they can probably be taken as a sample of what was available during the preceding century. Harcourt's list provides considerable variety:

> The things which the Indians desire from us by way of trade . . . are Axes, Hatchets, Bil-hookes knives, all kinde of Edge tooles, Nailes, great Fishhookes, Harping-irons, Jewes Trumps, looking-glasses, blew and white Beades, Christall Beades, Hats, Pinnes, Needles, Salt, Shirts, Bands, linnen and woolen Cloathes, Swords, Muskets, Callivers, Powder, and Shot: but of these last mentioned, wee are very sparing, and part not with many, unlesse upon great occasion, by way of guift to speciall persons. [Harcourt, 1613, pp. 105–106.]

A French enumeration of 1654 includes a few additional items:

> They will give you cotton, hammocks, agave fiber, gums, oils, medicinal roots, precious stones, pelts of diverse kinds, and land and water animals in very great number; and you will give them chisels, center bits, fish hooks, awls, bells, brass rings, glass beads and other baubles that they call Caracoulies, and which they hold in great esteem. [Boyer, 1654, pp. 333–334.]

La Barre, in 1666, gives this advice to prospective settlers:

> And to trade with the Indians, one only needs bill-hooks, axes, knives, old white linen to make shirts to cover their bodies, white glass beads, and no other color, and cristal beads from number 30 to number 44, a few old hats that are not completely worthless, and steel for fire-making. All the rest of the gewgaws that most people bring they are unable to dispose of since they have no trade value. [La Barre, 1666, p. 52].

With the inception of colonization in 1600, contact between the two groups became more intimate, with consequently greater opportunities for acculturation. Initially, the Indians showed themselves cooperative and receptive. Harcourt, whose account of his travels in

Guiana was published in 1613, paints them as eager to adopt European beliefs and practices:

> Moreover, the good inclination of the people towards our Nation, being willing to trade with us, and become subjects of his Majesty, our Soveraigne; their loving and gentle entertaining of us, desiring to have us live and abide amongst them; and their tractable conversation with us, not refusing to be instructed in Christianitie; and coveting to imitate and learne any trade, or worke, that they see used or practised by our men; are no small motives to persuade the prosecution of this action, and plantation in Guiana. [Harcourt, 1613, pp. 130–131].

One of North's men gave a similar report of the friendliness of the Indians on the Amazon:

> The Christians which live in this Countrie take no paines nor labour for anie thinge; the Indians both house them, worke for them, bring them victualls, and theire Commodities for a small reward and price, either of some Iron worke or glass beades, and such like contemptible things . . . [MS. of 1622–23 *quoted by* Williamson, 1923, p. 88.]

Contact of this sort must have resulted in a certain amount of acculturation.

A more radical disruption of native life came from the practice of levying large numbers of Indians to supplement the rather small European forces on voyages of exploration and in their conflicts with one another. The siege of the English fort Cumau in July of 1631 was laid by 11 Portuguese and 5,000 Indians (Vianna, 1905, p. 242). When Teixeira ascended the Amazon in 1637, he took with him "seventy *Portuguese* souldiers, and twelve hundred Indians to row and to bear Arms, who together with their Wives and Servants made two thousand Persons" (Acuña, 1698, p. 36). It is probably needless to add that large numbers of Indians perished in these undertakings.

Acculturation was implemented by the transplantation of whole villages to the vicinity of forts, where the native labor could be exploited more readily. This situation is described by Pedro de Azevedo Carneiro, who advocated its adoption for the maintenance of the newly constructed fort of Santo Antonio de Macapá at the end of the 17th century:

> And for the conservation of this fort and its inhabitants your Majesty should order brought down two villages bound to the service of the fort, so that the Indians can do the farming and serve the inhabitants for the latter's payment, and serve the fort by fishing and hunting for the infantry and principally by paddling the canoes that may be necessary for the aforesaid fort, and be advised that without the aforesaid Indians it is impossible to maintain it; as all those that have been built and should still be built greatly require that each have a village nearby, as there is at the forts of Gurupá and Parú, because there is great detriment in going to fetch Indians from various villages to come help at these forts. . . . [Reis, 1947, p. 45; cf. Vianna, 1905, p. 244.]

Most violent and inhumane of all was the slave trade, and in this the Portuguese were the most relentless. One of the major figures was Bento Maciel Parente, who is characterized by one historian as "the foremost persecutor of the Indians, wrenching thousands of unfortunate Indians from the forests by steel or fire, to take them to the markets of Belem" (Braga, 1949, pp. 61–62). The Nheengaíba of Marajó were roused to such a frenzy by this treatment that they not only revenged themselves on Portuguese on their lands, but even organized canoe attacks on all who came within view of their coast (Ferreira Penna, *in* Hartt, 1885, p. 110). This state of affairs was lamented by Vieira:

> Although distant only a day's journey from the city of Pará, 39 years of Portuguese residence have not brought the light of Christianity to this island. On the contrary, such are the relations that have existed with these Indians, that where we found them gentle and polite not long ago, they are today barbaric and ferocious. Because of this scandalously bad treatment, they have conceived such hatred and dread of the Portuguese nation that they wish neither peace nor commerce with us. Instead, they trade with the nations to the north, who often come this way, because they say they find them more trustworthy and need not fear the loss of their liberty. [Vieira, 1925, p. 393.]

Finally, much confusion and disruption of the Indian culture was accomplished by the transplantation of large numbers of Indians from one part of the Amazon to another. This included not only the removal of groups from the islands and the Guiana coast mentioned above, but the bringing of others into the region. Two accounts will serve as examples:

> Indians were brought from the Rio Negro, the Tocantins and the Amazonas in 1764 to build the fort at Macapá because all the native population of the region had fled to the interior. [Reis, 1947, p. 50.]
>
> . . . in 1754 the intrepid adventurer, Francisco Portilho de Melo, brought 500 savages from the upper Rio Negro to the Ilha Sant-Ana, transporting them in 32 canoes. [Anon., 1946, p. 148.]

Certain generalizations can be made from this chronology of contact to distinguish the periods and areas. During the century from 1500–1600, contact was limited to sporadic trading vessels, which provided the Indians with various articles of European manufacture in return for products of the woods and streams; otherwise, their life continued as it had in aboriginal times. From 1600–1620 numerous forts and plantations were established along the north bank of the Amazon, principally between the present town of Macapá and the mouth of the Rio Parú, on the Ilha de Gurupá, and at the mouth of the Xingú. Another focus of colonization was the Rio Oiapoque and the region to the north now occupied by French, Dutch, and British Guiana. There appear to have been practically no European settlements between the Cabo do Norte and the Rio Oiapoque.

This period of relatively peaceful colonization, during which the Indians appear to have been regarded rather as friends than as inferiors, was interrupted by the Portuguese decision to sweep competitors from the Amazon region and establish sole jurisdiction. In the fights that ensued, Indians took sides or were levied to increase the manpower of all claimants. During the decade that this conflict was in progress, it is probable that considerable disruption of Indian culture was accomplished. After 1630, the British and Dutch retreated north of the Oiapoque and the Indians of the mouth of the Amazon were left at the mercy of the Portuguese, who decimated their numbers by punitive expeditions and slave raids. Although the only record of the depredations of disease appears to be Betendorff's account (1910, pp. 586–587) of a smallpox epidemic on Marajó in 1695, diseases must have taken their toll from the beginning. Between 1700 and 1800 there was widespread migration, both voluntary and compulsive, from the islands to the Guiana mainland, and from both to distant parts of the Amazon.

ETHNOHISTORICAL INFORMATION

TERRITORY OF AMAPÁ

TRIBES

The effort to reconstruct the tribal picture in the southern Guianas (French and Brazilian) runs into considerable complexities as a result of the wholesale confusion of river, tribal, linguistic and family or individual names. The use of different of these units by different writers has produced a wide range of designations, varying from a handful to several dozen, as well as contradictions as to the tribe occupying a given region. For example, according to Harcourt (1613, p. 132) the Rios Maicary (Mayacaré) and Connaxini (Cunaní) were occupied by Yaios and Caribs, the Rios Cassiporogh (Cassiporé) and Arracow (Arucaua) by the Arracoories. La Barre, however, designates the group inhabiting "part of the Rio Aricary, and the Maricary, Vninamary and Cassipoure" as Palicour (1666, p. 35). In another place he speaks of the "Aracarets and Palicours who inhabit that coast," referring to the region between Cabo do Norte and Cabo Orange (op. cit., p. 14). Biet (1664, p. 148) says that a small tribe called the Racalet live along the Rio Maricary as well as a few Palicours, who apparently occupy the area between here and Cabo Orange. In French Guiana are the Galibis (La Barre, 1666, p. 36) or the Caribs (Harcourt, 1613, p. 132). Harcourt designates the occupants of the Rio Oiapoque as "Yaios and Arwaccas" (ibid.), and notes that the Caribs north of the Rio Oiapoque are "mortal enemies" of the "Yaios, Arawaccas, and other nations their allies" (op. cit., p. 85). Keymis

(1596) also mentions that the Oiapoque was inhabited by Arawak. In contradiction to this differentiation between Carib and Arawak is Biet's statement that all the tribes between the Rio Maricary and Surinam "have almost the same language, except for a few words" (1664, p. 151).

In spite of the intensive settlement in the region south of the Rio Araguarí, there is little information on Indian tribes. Harcourt (1613, p. 132) lumps the groups inhabiting the Amazonas, Arrapoco and Arrawary under the label "Charibs." The general region south of the Rio Matapí was known as the "Province of Tucujú," after the Indians predominating there. One version of tribal distribution is shown on figure 204, reproduced from a map compiled by William Delisle and published in 1703.

Harcourt recounts an experience that suggests an absence of extensive contact between the Indians of this region and those to the north. The exploration of the Rio Araguarí was undertaken in 1609 by Michael Harcourt, who was accompanied by Indians from the Oiapoque region. They spent several weeks in exploration, living primarily by hunting and fishing, added to the provisions of manioc they had brought along. However, they had to turn back before accomplishing all they wished because the manioc supply dwindled and could not be replenished locally since the "Arrawaries" who lived on that river "would not freely trade with them [the Oiapoque Indians] upon this first acquaintance, but alwaies stood upon their guard, on the other side of the river, where they inhabited" (Harcourt, 1613, p. 112).

The identifications made by the chroniclers do not correlate well with more recent ethnographic or linguistic maps. Gillen (1948) lists 22 tribes inhabiting the coastal area between the Rio Jarí and Cayenne in historical times. These include the Tucujú along the coast between the Jarí and the Matapí and, continuing northward, the Palicur, Paracoto, Aricari and Palicur, Mayé, Yao, and Galibí. Linguistically, they embrace Arawak, Carib, Tupi, and unidentified stocks. Rowe (1948), on the other hand, classifies the Indians of the Brazilian Guiana coast into five tribes: the Apurui and Paikipiranga south the Rio Araguarí, and the Emerillon, Palicour, and Marawan to the north.

Mason's linguistic map (1950) of South America shows the entire coast as Arawak, except for a Carib enclave in the vicinity of the Rio Matapí and some unidentified languages at the mouth of the Oiapoque, plus a late historical influx of Tupí on the coast north of the Araguarí. His identification of the Palicur as Arawak is in contradiction to Biet's statement quoted above that the same basic language was used by the Indians on both sides of the Oiapoque, and with Harcourt's

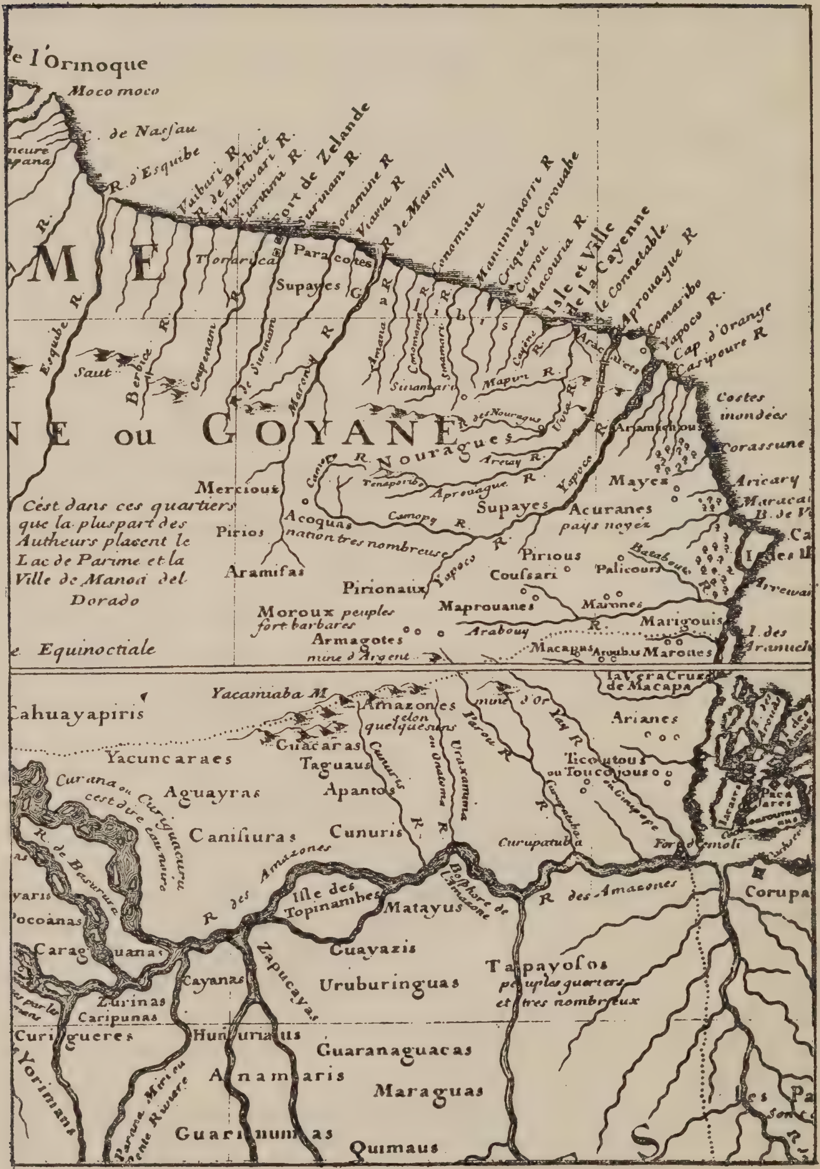
e l'Orinoque
Moco moco
C. de Naſsau
R. d'Esquibe
Vaibari R.
R. de Berbice
Wiwiwari R.
Surinam R.
Fort de Zelande
Surinam R.
Coramine R.
Viana R.
R. de Marony
Conamama
Manamanorri R.
Crique de Corouabe
Currou
Macouria R.
Isle et Ville de la Cayenne
le Connetable
Aprouague R.
Comaribo
Yapoco R.
Cap d'Orange
Casipoure R.
M E
Toraricca
Paracotes
Supayes
G a l i b i s
Esquibe R.
Saut
Berbice R.
Coupenam R.
R. de Surinam
Marony R.
Amana R.
Conamama R.
Sinamari R.
Sinamari
Mapori R.
Cayene R.
Oüia R.
Aracarets
Costes inondées
Corassune
Aricary
Maracari
B. de V
Aramichous
NE ou GOYANE
Nouragues
R. des Nouragues
Arcuay R.
Tenaporibo
Aprouague R.
Camopy R.
Yapoco R.
Mayez
Mercioux
Acoquas nation tres nombreuse
Supayes
Acuranes pays noyez
C'est dans ces quartiers que la pluspart des Autheurs placent le Lac de Parime et la Ville de Manoa del Dorado
Pirios
Aramiſas
Pirionaux
Pirious
Couſsari
Palicours
Iles de
Arrewari
Moroux peuples fort barbares
Armagotes
mine d'Argent
Maprouanes
Marones
Arabouy R.
Marigouis
I. des Aranucl
Equinoctiale
Macapus
Aroubus
Marottes
la Vera Cruz de Macapa
Yacamiaba M.
Amazones selon quelquesuns
mine d'Or
Parou R.
Yari R.
Ariames
Cahuayapiris
Yacuncaraes
Guacaras
Taguaus
Cunuris R.
Ou Unatoma R.
Uruxamma R.
Ticoutous ou Toucoyous
Curana ou Curiyacuru cest dire eau noire
Aguayras
Apantos
Canisiuras
Cunuris
Curupatuba
Curupatuba
Fort de Comoli
R. de Basurur
R. des Amazones
Isle des Topinambes
Matayus
Bosphore de l'Amazone
R. des Amazones
Corupa
yaris
Pocoanas
Caragouanas
Cayanas
Zapucayas
Guayazis
Uruburinguas
Tapayoſos peuples guerriers et tres nombreux
Zurinas
Caripunas
Curiigueres
Humuriaus
Guaranaguacas
R. Yorimans
Parana Mirim ou petite Riviere
Aramamaris
Maraguas
Guarimumas
Quimaus
S

FIGURE 204.—Early map of the tribes inhabiting the Guiana coast published by William Delisle in 1703.

information that the Yaos were the enemies of the Caribs, who lived to the south and west of them (1613, p. 87).

These conflicting statements can be partly laid to the extreme disruption of the area in the years following the contact, and this situation makes it virtually impossible to arrive at a reliable reconstruction of the aboriginal picture from ethnohistorical sources.

POPULATION

As far as we have been able to discover, there are no contemporary figures on population density for Brazilian Guiana. Vague statements, like "the Palicour . . . are a rather large nation" (La Barre, 1666, p. 35), "the eastern Aricarets are not very numerous" (ibid.), and "their Countrey was full of inhabitants" (Harcourt, 1613, p. 76), are not very helpful. A few hints are provided by incidental observations. Biet (1664, p. 355), for instance, states that Galibi villages contained up to "thirty or forty men with their wives and children." The Galibis, who were the most powerful group in the area and gave the French much opposition, were so diminished by 1666 that "all those who live between the Aprouague and the Marony cannot furnish twenty war canoes armed with twenty-five men each" (op. cit., p. 36).

Population figures for the area between the Oiapoque and the Amazon disputed between the French and Portuguese are quoted by Crevaux (1880, pp. 81–82) from the journal of a French Catholic mission, which gives "not less than 200,000 inhabitants." Unfortunately, no date is given for this estimate. In 1880, Crevaux believes that the total was not over 3,000 (ibid.).

A calculation of the aboriginal population of the Guianas as a whole has been made by Steward (1949 b, p. 663). His figure of 213,750 is based on a density of 15 persons per 100 sq. km., or half again the present density. In another place (op. cit., p. 666), he gives the Indian population of the Guianas in 1500 as 90,000, which apparently includes only the coastal area.

CULTURE

The fullest descriptions of Indian culture are by La Barre (1666), Biet (1664), and Laon (1654), and these are unfortunately mainly devoted to the Galibi who inhabited the French Guiana coast, just north of the area examined archeologically. However, most of the information is sufficiently general that it could apply to almost any tribe belonging to the Tropical Forest Pattern of culture, and so it is probably safe to conclude that it applies equally well to the prehistoric tribes of Brazilian Guiana. At least, there is no archeological evidence to the contrary. A further indication that this is true is provided by

Biet (1664, p. 390) who, in specifying that burial practices differ widely, implies that other aspects of culture were more uniform.

Subsistence.—Both maize and manioc were grown by the Guiana Indians, according to Harcourt. Of maize, he reports that "in the space of two or three houres one man may set as much of this wheat, as may sustaine him, and many more a whole yearc" (1613, p. 151). In another place (op. cit., p. 94) he says that maize "yeeldeth admirable increase, even a thousand or fifteene hundred for one, and many times much more." As to its use: "It maketh excellent meale, or flower for bread; and very good malte for beere or ale, and serveth well for sundry other necessary uses for the reliefe of man" (ibid.).

The preparation of bitter manioc is described in detail by Biet:

> Bread is made in the following way: this root is scraped as one would do with a turnip and then grated with a grater of iron or copper, which is locally called a *greige*. After being grated, it is put in bags, which are placed in a press to remove the juice, which is very dangerous. When the juice has been completely removed, this flour is converted. It is taken from a shallow vessel and spread on a plate of iron the thickness of a finger. This is placed over a small fire, and when it is cooked on one side, it is turned to the other. It is immediately cooked, and one person can make at least sixty of them in a day. [Biet, 1664, p. 336.]

The abundance of game in the area also made a great impression on Harcourt:

> The other thing to bee observed heere, is the store and plenty of victuals in Guiana; where sixty foure persons togeather in one company, without any provision of victuals (bread and drinke excepted) before hand made, could travell abroade for six weekes space, most commonly lodging in the woods, seldome in any towne or village, and yet in all places wheresoever they came, could readily get meate sufficient for them all. [Harcourt, 1613, p. 113.]

Several techniques were used in hunting:

> They used only the bow and arrow for hunting, whether of four-footed game or of birds. . . . They also have dogs, which they train to corner pigs. They use no traps, but they understand very well how to lie in wait for game. [Biet, 1664, pp. 357–358.]

Arrows were specialized according to the type of use they would receive. Laon (1654, pp. 90–91) lists five types, one each for fish, animals, birds, and war, and one with a blunt, button tip for stunning paraquets and monkeys. Harcourt (1613, p. 89) notes that arrows were frequently poisoned.

The fishing resources were so rich that they were exploited by the Europeans not only for their own immediate use but for trade (Biet, 1664, p. 148). According to La Barre (1666, p. 14), the Aracaret and Palicour hunted the manatee with a harpoon and traded their catch to the French, English, and Dutch. Biet (1664, p. 358) reports fishing by bow and arrow and by drugging streams among the Galibi who inhabited the Cayenne area. The latter technique is also described by Acuña (1698, p. 67) for the same tribe.

The method of preservation of meat is given in some detail by Laon:

> As soon as they have killed something, they smoke it, because meat does not remain fresh for more than a day and a half; the smoking grill is sometimes made of a half-circle of stones a foot high, across which they lay sticks, placing the meat above and the fire beneath. Another kind of grill, is that in which they put half a pig or deer on a wooden spit laid on two forked sticks. Then they make a fire on both sides, which roasts the meat without it being turned, and this method of smoking produces a very agreeable taste; they never use salt, and for seasoning they have only pepper . . . [Laon, 1654, pp. 91–92.]

Another variety of the babracot, used for preserving fish and game by the Galibi, is described by Biet:

> The smoking grill is made with four forked sticks two feet long, which they set in the ground and on which they lay twigs to form a grill, on which they place the fish, making a fire below, turning it from time to time until the fish is done. So that it will keep, they expose it to the fire every day. They do the same with meat, such as deer, pig, armadillo, agouti, etc., which they roast in the hide. [1664, p. 358.]

The general subsistence of the Guiana Indians is summarized by La Barre:

> In general, all the Indians live by agriculture, to which they only apply themselves sufficiently to produce what is needed for subsistence. They are extremely adept at all kinds of fishing, and prefer fish to meat. They eat moderately, but are great drinkers of several kinds of beverages that they make, and which the French have imitated. *Vuacou* is made with cassava that is moistened and allowed to ferment. This drink is quite good and very refreshing. *Paliuot* is made with burned cassava and tastes somewhat like beer. *Maby* is made with boiled potatoes, and is like unfermented white wine; it is very pleasant to drink, but is a little flatulent. [La Barre, 1666, pp. 37–38; the preparation of these drinks is also described in Biet, 1664, p. 356.]

Laon's description of Indian hospitality gives an indication of the composition of a feast:

> . . . when you visit them, they receive you with open arms, and make you a feast after their custom, where the table is the ground; women come from all parts of the house each bringing you a dish, one deer, another pork, one fish, another bird, one crabs, which they estime greatly, with *pimentade*, which is a sauce made with pimento and water . . . their bread is cassava. They also bring you three kinds of drink one of which is called *vuacou*, which they use ordinarily; it is a thick beverage, composed of a paste ground by the women between their teeth and mixed with pure water . . . they have also two other kinds of beverages, which they call *maby* and *palinot*, the latter intoxicating, which are used mainly in their banquets. . . [Laon, 1654, pp. 86–87.]

Dietary restrictions and taboos were in force in certain situations. They were observed by fathers before childbirth (see p. 576) and by shamans and war leaders (see pp. 575, 578).

Settlement pattern.—Choice of a village location appears to have been determined by two factors, the wet season conditions and defensibility. Biet describes the determinant of the Racalet village location as the former:

> . . . the habitations of this nation are three leagues from the sea, because

> nearly all the land is inundated. Their houses are on little hills, and it is almost impossible to go from one to another, principally during the rainy season, except in canoes. [Biet, 1664, p. 374.]

While comfort during the wet season was undoubtedly always a factor in the choice of a site, defensibility appears to have also been a strong consideration. Harcourt describes one settlement in the Oiapoque region as strategically located:

> When I had thus setled my company at this village, I went out to view the situation of the place, and the advantages for defence thereof. It is a great rockie Mountaine, not accessable by reason of vast woods, and steepe rockes, but only in certain places, which are narrow foote-paths, very steepe and easie to be defended: whereby we were lodged as in a Fort . . . [Harcourt, 1613, p. 78.]

A similar comment was made by Biet on the care with which the Indians concealed the access to their villages:

> . . . the paths that lead to these habitations are so narrow that only two men can walk abreast. The savages do not wish to make them wider for fear their enemies will discover them, and one can only reach their villages after many detours. [1664, pp. 166–167.]

The Galibi used two types of locations:

> They usually live on small hills, clearing a large area around their houses, or else on flat ground, always close to a creek or small river, or to a spring to supply their needs. [Biet, 1664, p. 354.]

There are a few scattered clues to house type. Laon's description of Indian hospitality quoted above suggests a communal house type, while Biet (below) implies individual family houses were used in some places. La Barre (1666, p. 15) remarks that the low swampy coast of the Aricary, Vnimamary, and Cassipoure rivers is so unsuitable to habitation that the Indians there "for lack of high land on which to build their houses, are forced to place them in trees, where they look more like the nests of huge birds than the abodes of reasonable creatures." Laon gives a few details of house construction and equipment:

> Their houses are made of wood and covered with the branches of palms, which is a very good covering, and when they travel, their equipment consists of a cotton hammock, which they attach to the first trees they encounter when they wish to sleep, a bow, a bundle of arrows, and a little basket in which there is a comb and a mirror. [Laon, 1654, p. 98.]

The composition of a Galibi village is described in detail by Biet:

> They have a large, well-cleared plaza so that there will be plenty of room for dancing and other exercises. In the center of this plaza there is a large hut, sometimes more than 150 feet long, . . . It is open on all sides, having only a roof of palm supported by forked sticks and posts. It is here that they spend the day together conversing about their affairs, seated on their beds which they call *Accadots* or *Amacs*, and carrying out their tasks, like making bows, arrows, clubs and similar objects, when they are not occupied with hunting or fishing. Around this shed, at a distance of about 20 feet, are the houses where they go to sleep at night. Some of these are fortified with a double row of posts well-fastened

together, through which arrows cannot penetrate; this is for protection when they are surprised by their enemies. [Biet, 1664, pp. 354–355.]

Village size is generally unspecified. Harcourt (1613, p. 76) speaks of one as "small." Biet (1664, p. 168) gives an account of the burning by the French of an Indian village, which was first ransacked of useful goods including 48 hammocks, suggesting a comparable population. A Yao village on the Oiapoque contained 35 to 40 persons (La Barre, 1666, p. 35). Galibi villages numbered up to 40 families (Biet, 1664, p. 355).

Transportation.—All of the tribes made dugout canoes, which they used for fishing and for traveling. That rather extensive voyages were undertaken is indicated by an account of a Galibi expedition through enemy (Palicour) territory to the Rio Mayacaré to negotiate for an alliance with the Racalet who inhabited that river (Biet, 1664, pp. 371–6). Going took 17 days, partly because the wind was unfavorable, but also because a week was taken out for a feast to raise morale depleted by nervousness over the possibility of attack. The return took only 5 days, the wind making possible the use of sails, which speeded progress.

Manufactures.—Archive sources report arts and crafts similar to those in use today. The Galibi produced baskets of many kinds including strainers for manioc flour and tipitis (Biet, 1664, p. 355). Pottery jars up to 30 gallons in capacity were made by coiling (op. cit., pp. 364, 355–356). Cups for drinking were made by halving tree gourds (op. cit., p. 365; Laon, 1654, p. 87). Hammocks were in general use and made a strong impression on the Europeans because of their convenience and suitability to the climate. These activities, together with the manufacture of bows and arrows, were men's work (Biet, 1664, pp. 355–356).

By 1652, the Galibi were so acculturated that Biet (1664, p. 336) describes the use of a grater of iron or copper for shredding manioc and of an iron griddle to bake cassava bread. He notes, however, that at the time of their discovery, these Indians "had no instruments for cutting and similar activities except sharp and pointed stones" (op. cit., p. 153).

Other manufactures included stools 6 inches or less in height, and musical instruments such as small drums, flutes, and horns (op. cit., p. 365). Numerous items of dress and ornament were also made.

Dress and ornament.—Although all the descriptions of the Guiana Indians begin with the statement, "they go completely naked," this appears to be a relative rather than an absolute evaluation impelled by the extreme contrast with the European dress. The three most explicit sources all describe some type of pubic covering worn by at least part of the population. Among the Galibi, the men wore a piece of cloth as a loincloth and the women a "skirt as wide as two hands, woven of glass beads," while children and old people went nude (Biet, 1664, p. 353). Laon (1654, p. 89) designates those who wear a "skirt" as the "young people," which generally agrees with Biet, and observes that this is done "more for finery than for modesty." Harcourt reports the use of a pubic covering only by males:

> . . . although the better sort of men (especially the Yaios) doe cover their privities, by wearing over them a little piece of Cotton cloth pretily woven after their manner; yet did I never see any of their women covered in any part, either above or beneath the waste . . . [Harcourt, 1613, pp. 72–3.]

The hair was worn long and care was taken to keep it well combed. Facial hair was removed except by old men (Biet, 1664, p. 352).

In contrast to the paucity of clothing, ornamentation was extensive and included both painting and the wearing of decorative objects. The Galibi practice is described in detail by Biet:

> To make themselves more attractive, they paint their bodies in various patterns with black and with the juice of the Genipa apple, which is dark blue that disappears on the ninth day. They redden themselves in certain places with *urucú*, a kind of paint that grows in the country. They oil their hair with special oils to make it more glossy. The majority have their ears and lips pierced, where they insert gems and other pointed objects. They wear chains of beads with eighteen or twenty strands, which they call *Caracolis*, placing them at various places on their arms and legs. They have other chains of small rings of very small bone, which they call Oüarabis. Those who make them spend much time at it; the former are made from the shell of a mollusk . . . . They think very highly of them and spare nothing to own them; they are their greatest treasures. There is also a certain green stone that they estime greatly, which comes from the Amazon and is retrieved from a lake with great ceremonies. These stones have special virtues: it is said that they cure epilepsy and bloody flux. The women, besides these things, prize bits of crystal [glass beads?], which are their most beautiful ornaments. They also greatly estime thimbles, which they pierce to hang them on their hair.
>
> It is primarily at their social gatherings that the women don all of these gewgaws, ... In addition to these jewels, the men make marvelously beautiful hats of multicolored feathers, and also belts in which they carry their weapons. [Biet, 1664, pp. 353–354.]

Laon's account (1654, p. 99) differs slightly in mentioning nose as well as lip and ear ornaments, and in describing the tinting of the hair as well as the skin with red *urucú*. The use of feathers and beads is noted also by Boyer (1654, pp. 280–281).

Social organization.—Villages were composed of extended families or lineages. Biet explains that, "There are as many houses as the family is large, and there are settlements where there are thirty or forty men with their wives and children . . ." (1664, p. 355).

Social stratification was generally absent. The early accounts speaking of "chiefs" or "kings" reflect a projection of European ideas into the aboriginal situation. Later, more discriminating writers recognized the limited powers of the leaders:

> They are all equal, although they have leaders who are like village chiefs, whose orders they obey on occasion: nevertheless they are no higher than the rest, and carry no sign of their rank except the club, which they place on their hammock, by which one recognizes them if one sees them in their house. They have no kings, as stated by Moquet, who was in this country 60 years ago, unless he gives the name king to the one who is their principal leader in time of war, who is ordinarily the most experienced, the one who has done great deeds among them, and who is the oldest . . . . He is the one they generally consult in the most important matters, and they defer greatly to his advice. [Biet, 1664, pp. 361–362.]

Boyer gives the same kind of information:

> The Indians have no rulers, chiefs or lords, and recognize no superiority among themselves. The oldest members of each family are respected as the leaders of that family . . . . They have several subordinations for command in war, electing for this purpose a general who sets the time and place of the assembly, the order of the march and of the attack and combat, after which he has no more authority. [Boyer, 1654, p. 38.]

The question of how a man qualified for the position of a war leader is answered in several ways by different authors and it is difficult to decide whether these are tribal differences or simply faulty observation. Biet, as quoted above, says that he is the oldest and most experienced man. Boyer (ibid.) makes the choice seem wider by describing a special meeting of village leaders to decide upon the course of action and the "election of their general." Both Biet and Laon, however, give detailed accounts of a period of fasting and ordeals undergone by those who wish to become "captains." This trial lasts "more than 15 days" according to Laon (1654, pp. 92–93) and 6 weeks according to Biet (1664, p. 379). During this time the initiate is confined to his hammock, maintains a partial fast, undergoes a daily whipping to test his endurance, is subjected to biting ants to test his courage, and is made to submit to other ordeals. The use of the plural suggests the possibility that this ordeal is a puberty rite required of all males rather than one restricted to the war leader, whose selection would be a relatively rare event.

All the important issues are discussed in council, apparently composed of the adult males of the village, each of whom gave his opinion. The decision accepted was the one recommended by the older men, whose greater experience was considered to have given them greater wisdom (Biet, 1664, pp. 352–353).

Division of labor was on sex lines, with tasks apparently carried out wherever possible in the company of others. Some activities were communal, such as clearing of gardens and house building, with the owner providing a feast in payment (Biet, 1664, p. 364). The festivities, comprising 2 to 3 days of drinking and dancing, preceded the work.

More important occasions for social gathering were the death of a leader, and the preparation for a raid or its successful conclusion. These events brought visitors from other villages, involved special preparations of food, drink, and shelter, and lasted as long as the refreshments held out (Biet, 1664, pp. 364–365). On these, as on other occasions, the men ate first, and were served by the women (op. cit., p. 366).

Recreation.—All social gatherings were accompanied by dancing and music, in which "they make the air reverberate with the sound of their little drums, their flutes and their horns" (Biet, 1664, p. 365). The dancing appears to have been reasonably energetic: "Their method of dancing is in a circle, without joining hands, but executing amazing postures, all in the same way and to the cadence of their instruments" (ibid.).

Life cycle.—Food taboos were in force prior to birth, at least among the Galibi:

> When a married woman discovers that she is pregnant, she informs her husband, who then does many superstitious things for fear that the child she carries may die. He refrains from eating many things and observes a strict penance. He is afraid to touch large fish, like the manatee, the turtle and other such. They do not wish to come near to anyone who fishes for them, for fear, they say, that their children may die, and their souls enter into those fish. [Biet, 1664, p. 389.]

Immediately after the birth of the child, the mother bathes it and herself in a nearby stream and then resumes her ordinary activities (Laon, 1654, p. 97). The husband on the other hand, immediately takes to his hammock. In one account, he remains there for 3 weeks, complaining to visitors that his stomach aches (ibid.). Another account gives 6 weeks as the period of duration of the couvade, during which time the man eats so little that "he arises as thin as a skeleton," and specifies that he must kill a species of bird as soon as it is over (Biet, 1664, p. 390). Children were greatly desired and affectionately treated:

> The women are crazy about their children, they love them so much. They bathe them every day in a spring or river. They do not swaddle them, but lay them in a small cotton hammock made especially for them, leaving them always naked . . . these people never strike or correct their children, allowing them to live in great freedom, without doing anything that angers the parents . . . They never let them out of their sight, taking them on all their voyages and even when they go to war. [Biet 1664, p. 390.]

Marriage could be polygynous, and was apparently easily entered into or dissolved (Laon, 1654, p. 90; Boyer, 1654, p. 279). The ceremony described by Boyer (ibid.) involved a week of festivities including dancing, singing, and drinking. Biet goes into somewhat greater detail:

> When the father of a girl promises her to the one who has asked for her hand, he places the two back to back and they give each other food and drink reciprocally. Then they both are placed in a new hammock, while the other young people dance and drink to the health of the new husband, who has provided the refreshments. [Biet, 1664, p. 388.]

Old age was rewarded with certain exemptions from customary behavior, such as freedom to allow facial hair to grow among men (Biet, 1664, p. 352), and freedom to dispense with the pubic covering on the part of both sexes (op. cit., p. 353). Elderly people were regarded with respect and consulted for advice.

Funeral practices and methods of disposal of the dead varied greatly even between adjacent groups, according to Biet (1664, p. 390). He describes the funeral ceremony of the Galibi as involving singing, dancing, and weeping. A similar account is provided by Harcourt:

> . . . at the death of any of their Cassiques, Captaines or great friends whom they esteeme, they will make a solomne feast, (their chiefest provision being of their best and strongest drinke, which they call Parranow) which feast shall continue three or four daies, or as long as their liquor lasteth, spending their time in dancing, singing, and drinking excessively . . . during this solemnity of their drinking, some women being neerest of kin unto the party dead, doth stand by and cry extreamely. [Harcourt, 1613, pp. 91–92.]

Cremation, either of the body or of the bones, is the only method of disposal of the dead mentioned in any of the sources, but the details differ in each account. Biet (1664, p. 39) describes the erection of a funeral pyre on which the corpse was placed, together with such utensils and weapons as he had used during life. The dancing and drinking continued until the body was entirely consumed. An alternative practice was the burial of the body until the flesh was gone, followed by cremation of the bones, mixture of the ashes with water, which was drunk and rubbed on the legs (op. cit., p. 392). Laon (1654, p. 87) also speaks of cremation, specifically denying the use of jars for the preservation of the ashes.

Sacrifice of other individuals to accompany the deceased into the next world is described by Harcourt and Boyer. The former restricts this practice to chiefs, and specifies the victim as preferably a slave or prisoner of the deceased, or failing such, a servant (1613, p. 92). Boyer, however, says that "they sacrifice to their parents and friends, the latter's wives, children and servants, to wait upon them in the next world . . ." (1654, p. 267). Since these practices have no parallel among existing Tropical Forest tribes, and conflict with the fact that little deference was paid to chiefs during life, they may be considered somewhat suspect.

Religion.—Although the ethnohistorical accounts begin almost unanimously with the statement that the Indians are completely devoid of religion, they all continue with a description of certain well-defined concepts of the supernatural. La Barre (1666, pp. 38–39) says that they recognize the devil as the cause of their misfortunes and fear him, but offer him no veneration. The sun and moon were believed to be alive, according to Harcourt (1613, p. 91), but were accorded no worship or sacrifice. Biet (1664, p. 360) describes two major supernatural beings recognized by the Galibi, and the same general information is also given by Laon:

> They perform no religious acts, although they believe in a god and a devil. The god they call *Tamoussi Cabou*, which means old man of the sky . . . and the devil is referred to as *Iroucan*. They believe that all the good that comes to them is the work of *Tamoussi Cabou*, and that all their misfortunes come from *Iroucan*. The result is that, since *Tamoussi Cabou* is naturally good, and consequently can do them no harm, it is not necessary to pray to him, but they pray to *Iroucan* so that he will never destroy them. [Laon, 1654, pp. 97–98.]

Shamans were the intermediaries between the people and the supernatural. They were obliged to submit to an ordeal comparable to the one undergone by warriors to prove their fitness. Afterward they observed extensive food taboos in order to preserve their powers. According to Laon,

> . . . their profession obliges them to observe troublesome laws concerning food and drink, and there are many delicate meats that they do not dare touch, like manatee, butter, cheese, porpoise, dolphin, beef, tortoise and all kinds of fat meat. The smallest fishes are the tidbits of these individuals; crabs and small birds roasted in their feathers on coals constitute their greatest delicacies. [Laon, 1654, p. 94.]

Their major function was the curing of illness, which they did by typical methods involving dancing, blowing, and sucking out objects. They did not treat injuries incurred in warfare or accidents; this was done by the women, who used herbs (Biet, 1664, pp. 385–387).

Life after death appears to have been vaguely defined. The disposal of personal effects with the body suggests a conception of an existence much like that on earth. The Galibi thought that the souls went "up above." The same group also believed in a kind of transmigration of the souls into large sea mammals, like the manatee, which they avoided eating as a consequence (Biet, 1664, p. 361). There is no indication that the souls of the dead were regarded with apprehension or that a house or village was abandoned at death.

Warfare.—Alliances and hostilities of long standing appear to have been in effect in the Guianas. The Galibi, in the Cayenne region, were traditional enemies of the Palicours, who occupied the area just to the south. Smaller tribes sided with one or the other, or tried to maintain neutrality as did the Racalet (Biet, 1664, p. 148).

Weapons of war are described by Harcourt as including:

> . . . Bowes and Arrowes, long staves sharpened at the point, and with fire hardened; wooden Swords and Targets [shields] very artificially made of wood, and painted with Beasts and Birds . . . their arrowes are oft-times poisoned [1613, pp. 87, 89.]

The favorite method of attack was at night, on a sleeping village:

> They do not attack each other in pitched battle, but try to surprise each other in their villages, and when one or the other is victorious, they beat to death and slaughter all those who are unable to escape the fury of the winner. They pardon no one except a few small children and young women whom they take back to their country in great triumph to serve them as slaves. And when they take one of the men alive, they keep him and fatten him, after which they kill him in a very cruel way. . . . [Biet, 1664, p. 148.]

Harcourt (1613, p. 87) describes a Carib raid on a Yao village, in which 200 Caribs burned and destroyed the houses and took many prisoners. The primary motivation seems to have been retaliation and revenge, with cannibalism being one way of accomplishing this.

In spite of the constant danger, precautions were unusual. Attempts were made to select defensible locations for settlements, and access trails were concealed (see p. 572), but there were no village stockades, and more interestingly, no watch was kept:

> During the night they sleep without fear, even when they are in the middle of enemy country. It is not their custom to be on guard, or to post sentinels, as a result of which they often pay dearly for their rashness, being surprised by their enemies. . . . [Biet, 1664, pp. 373–374.]

The selection of war leaders has already been described (see p. 575).

Lore and learning.—A knotted cord was used to keep track of time between an invitation to a gathering and the date of its occurrence. Such a cord, containing as many knots as there were days intervening, was sent by the host to the heads of each village. One knot was undone each day "and in this way they never failed to arrive on the correct day" (Biet, 1664, p. 363).

THE ISLANDS

Information on the Indians occupying the islands in the mouth of the Amazon is sparse, indefinite, and difficult to evaluate. Much of it consists of lists of tribes and the part of the Island of Marajó they inhabited. Details of culture are exceedingly rare, and occur as incidental or even accidental inclusions in accounts of missionary or other activity. There are no long descriptions of Indian customs like those written by some of the early colonists in the Guianas.

TRIBES

One of the earliest enumerations of the tribes of Marajó is by Vieira. In a letter written in 1654, he says that the island is "so large that it contains more than 29 nations, with languages as different as German and Spanish." Later, in 1659, he was more specific:

> In the large mouth of the River of the Amazons is an island longer and wider than the whole kingdom of Portugal, and inhabited by many nations of Indians, which because their languages are different and difficult, are called by the common name of Nheengaíbas . . . The nations with different languages introduced here were the Mamaianás or Aruans and the Anajás, which includes Mapuás, Paucacás, Guajarás, Pixipixis and others. [Vieira, 1925, pp. 556, 567–568.]

According to Ferreira Penna—

> The principal tribes inhabiting the island during the time of conquest and colonization were: the Aruans in the north and east, the Mapuás, Anajás, Guajarás, etc., in the south and west. Scattered in the center and at various points along the south and east coast were the Mamayanás, Sacarás, Jurunas, Muanás, etc.
>
> All these tribes and other sub-tribes comprised the population that the Portuguese called by the indefinite term "Nheengahibas" because each of them, it is said, used a separate dialect. [In Hartt, 1885, p. 109.]

Other authors specify 7 tribes as occupying Marajó, some of which differ from those listed above. According to Betendorf,

> There lived there seven nations, each with a different language, so that although living on the same island in the middle of the river, they could not understand each other and wars were frequent between them. The names of these nations are: Joannes, Sacacas, Aruans, Mapuázes, Mamaianázes, Pauxis and Boccas . . . [Betendorf, 1910, p. 90.]

Other names recorded are the Aruanazes in the vicinity of Soure, and the Goyanazes in the vicinity of Villar (Pinto, 1930, p. 351); the Amanajás and the Mocoões (Ferreira Penna, op. cit., p. 112); and the Combocas (Vieira, 1925, p. 561).

There is no specific information on the linguistic affiliation of the Marajó tribes. The derivation of the word "Nheengaíba" suggests one stock that can be eliminated. This term was applied to the Indians of the island by the Tupinambá, in whose language it meant speakers of an unknown, unintelligible or confused language (Vieira, 1925, p. 556; Tocantins, 1876, p. 57), which would presumably be non-Tupian.

In Ferreira Penna's opinion, the Aruã at least were Carib:

> In the mouth are two large islands facing the sea—Caviana which like the plains of Marajó was occupied by the Aruan tribe at the time of the coming of the Portuguese, and Mexiana, occupied by the Alexianos, as they were called by the Franciscan missionaries.
>
> These Alexianos entertained frequent relations with the Caribs of Cayenne, who were their relatives, and instigated by the latter and abetted by the French colonists, they waged heavy war on the Aruans, to whom they were also related, but from whom they had separated for various reasons . . .
>
> The Aruans were related to the Alexianos, who were Carib according to the Franciscan Missionaries, and it appears that the Tocujas who had the same

> origin and occupied the part of the Guyana between the Cajary and Maracá to the ocean were also Carib. The Aruan language, if it was not the same as that of the Tucujús, at least was perfectly understood by the latter, while it differs considerably from that spoken by the Tupinambás, although many words were introduced from the language into that of the Aruans. [Ferreira Penna, 1879, p. 65.]

This conclusion is disputed by Nimuendajú, who examined the vocabulary collected by Ferreira Penna in 1877 from an old shaman living at Afuá. He designated it as "clearly *Arawakan*, though quite different from that of the true *Arawak* of the Guiana Coast and of the *Palicur*" (1948, p. 195). Since Afuá is in the Nheengaíba zone rather than the Aruã, it may be that the vocabulary is not Aruã. If this were true, there would not be any necessary discrepancy: the Aruã could be Carib and the Nheengaíba, Arawak. Unless some of the lost works in the Aruã language produced by the missionaries in the 18th century are recovered, the question will have no possibility of solution since the language has become extinct with the extinction or acculturation of the speakers.

POPULATION

Bento Maciel Parente, writing between 1627 and 1632, mentions that there are "many islands populated with many people" in the mouth of the Amazon (Reis, 1947, p. 60). The only estimate comes from Vieira's account of the conclusion of the peace treaty between the Nheengahiba and the Portuguese. The Indians gathered at the meeting place and—

> The number of souls cannot be said with certainty; those who know least say that there may have been 40,000, which included a principal of the Tucujús, which is a province apart on the shore of the River Amazonas, opposite the island of the Nheengaíbas, and it is reported that they exceed the latter greatly in numbers, and that they comprise together more than 100,000 souls. [Vieira, 1925, p. 568.]

Julian Steward has attempted to reconstruct the native population of South America based on the earliest account available for each tribe or area. His figure of 30,000 for Marajó is based on a hypothetical density of 60 persons per 100 sq. km., which is the density prevalent among the Coastal Tupí (1949 b, p. 662).

CULTURE

Settlement pattern.—The Nheengaíbas, or some of the tribes included under this designation, built houses along the rivers during the wet season (winter), whereas during the summer they roamed in the forest on their lands (Vieira, 1925, p. 568).

Watercraft.—The Nheengaíbas had "light and well-armed canoes" which permitted them to harass effectively the Portuguese (op. cit., pp. 566–7).

Manufactures.—Vieira mentions the use of bows and arrows by the Nheengaíbas (ibid.). The Aruã had strong, broad-ended clubs for use in war (op. cit., p. 393). "Trumpets, horns, drums and other instruments" were used by the Nheengaíba (op. cit., p. 566–7).

Social organization.—D'Azevado describes the difficulties encountered in trying to acculturate the Indians to mission life and in so doing gives some details on division of labor and family composition:

> Quitting their forests, the Indians came into the settlements administered by the missionaries, where they gradually exchanged their ancestral customs for those belonging to the new existence. Communal houses and group living gave way to the initial separation of the sexes and a separate house for each family. The men passed from a leisure interrupted only by warfare to daily work interspersed with religious instruction: beginning in the morning with mass, confession, doctrine and often processions, ending at night with telling of the beads or litany; working in the manioc gardens and other projects for the support of the community; construction, beginning with the church, a simple thatched hut like the rest, but with its images and adorned inside with tinsel finery, brightly-colored cloths and barbarous paintings; expeditions into the forest to collect products, the sale of which contributed to the expenses of the church and of the community, . . . and in addition, prepared at all times to carry out the demands of the government or of individuals. The women were not obliged to work as hard as they had in their aboriginal state: besides domestic tasks, they spun and wove, leaving to the men the fatiguing agricultural work which had formerly been theirs. After the initiation of this Christian life, by baptism and moral instruction, the great problem was to eliminate polygyny, which met with resistance from the neophytes, who considered this the most intolerable of the sacrifices exacted of them. Forced to choose one among their wives for perpetual matrimony, they wavered between the most beautiful, the most diligent, the most skillful, the latest and the youngest. The rejected wives, in their turn, had to find a husband among the bachelors. This resulted in much displeasure and no moral victory, since the former relations were frequently reestablished, to the scandal of the missionaries, who did not fail to correct the adulterers. These and other derelictions were promptly punished, because the priests ruled in the patriarchal manner and prisons and corporal punishment constituted effective means of maintaining discipline. [D'Azevado, 1918, vol. 1, pp. 322–323.]

Life cycle.—An account of an elaborate ceremony associated with the taking of a name and thus gaining adult status among the Aruã is given by a soldier who claimed to have been a witness to it in 1643. There is no way of discovering whether any or all of the story is a fabrication, or whether this was the actual fate of the shipwreck victims captured by the Aruã in that year. The soldier reported that the ceremony began with the binding of captives to a post set upright in the center of the clearing. This done, the Indians—

> . . . gathered around them with great festivity and shouting, each with his "killing stick" in his hand. These are broad-ended clubs, strong and well-made,

> and used as weapons of war. Thus armed, they circulate around the victims, jumping and singing until they are no longer able to control their frenzy. Then they let go their clubs, vying with one another for the honor of smashing the skull of a prisoner. The first blows are always directed at the head rather than another part of the body, because these heathens cannot have or receive a name until they have cracked the skull of some enemy, and the greater the rank of the person or of the nation to which he belongs, the more honorable the name that is acquired. For this ceremony, it is not essential to kill an enemy but any person will suffice, even one dying a natural death. As a result, they often travel many leagues and enter the villages of their enemies under the protection of darkness, or remove a skull from its sepulcher and take it victoriously to the plaza of their village where they break it with the same festivity and ferocity as if it were a living victim and thereby take a name. [Vieira, 1925, pp. 393–394.]

Warfare.—The Nheengaíba developed a strategy in fighting the Portuguese, that made excellent use of the natural advantages of their habitat:

> The island is covered with a confused and intricate labyrinth of rivers and dense forest, the former with infinite entrances and exits, the latter with no entrance or exit at all. There is no way to surround, to find, to follow or even to see the enemy, who makes the trees the line of defense from which he aims and releases his arrows. And, so that this kind of violent and invisible warfare would not be hindered by homes, wives and children, the first act of the Nheengaíbas after resolving to go to war with the Portuguese was to dissolve and destroy the villages in which they lived, spreading the houses at great distances from each other so that one could warn the others of any danger and they would never be simultaneously attacked. In this way they inhabited the whole island without occupying any particular part, all the forests serving as their walls, the rivers as their trenches, the houses as their watch-towers and every Nheengaíba as a sentinel and their trumpets as signals of alarm. [Vieira, 1925, pp. 557–558.]

Of the island groups, the Aruã appear to have been the more warlike. According to Ferreira Penna, they were feared by their neighbors:

> The plains of Marajó, like those of the two large islands in the mouth of the Amazon [Mexiana and Caviana], were in the path of the migrations and dispersions of these famous conquerors who, by virtue of their warlike spirit, their courage and the superiority of their race, were prepared to overcome and dominate each and all of the other peoples who chanced to appear and dared to offer them resistance . . . . Their neighbors greatly feared the Aruã, who killed them or harassed them continuously with thefts and wars. [1879 a, p. 65; 1885, p. 109.]

ETHNOHISTORICAL-ARCHEOLOGICAL CORRELATION

With archeological documentation for the Islands of Marajó, Mexiana, and Caviana and the Brazilian Guiana mainland, and with relatively detailed contemporary observations by the early settlers in the northern part of the mainland area, it should be possible to elaborate considerably the cultural picture of the contact tribes. Two faults combine to minimize the success of this attempt: First, the almost complete absence of any ethnohistorical information on the

Aruã, who have been shown archeologically to be the dominant and probably the only tribe on Mexiana and Caviana in 1500, and second, the predominance on the mainland of data on the Galibi, who occupied the area just north of that included in the archeological investigation. A detailed comparison of the information from both sources is valuable, however, because it aids in the proper evaluation of both and suggests explanations for apparent contradictions.

The archive accounts of the islands specify that Mexiana, Caviana, and the north and east coast of Marajó were inhabited by the Aruã, at once the largest and most warlike of the tribes. This area corresponds to the one determined from archeological evidence, with a stronger concentration of sites on Mexiana and Caviana than on Marajó. The relatively simple culture indicated for the Aruã finds confirmation in the archeological evidence. As far as the Nheengaíba are concerned, no comment is possible at this time. No archeological material has been recorded from the Nheengaíba area, except possibly central Marajó, where the known sites are of an undisputably precontact nature. Whether this is because the Nheengaíba were a non-pottery-making group or simply a failure to discover the sites cannot be settled until a more concentrated effort is made to look for them.[36]

The ethnohistorical picture in Brazilian Guiana seems at first glance to be completely contradictory. There is a gross and irreconcilable discrepancy between the picture of two homogeneous cultural Phases with distinct geographical distribution demonstrated by archeology, and the hodge-podge of tribes belonging to numerous linguistic stocks haphazardly distributed through the Territory of Amapá, documented by the archive sources. Fortunately, this need not be laid to error on either side, but rather to the tremendous disruption and transplantation of Indian groups, either voluntarily or involuntarily, from and into the region in postcontact times. From the point of view of the archeologist, however, the situation has been hopelessly scrambled by these events, and attempts to relate prehistory to history can never have more than hypothetical results. All that can be said in this connection is that the ethnolinguistic classification most in accord with the archeological picture is that by Rowe (1948). His areal distribution for the Apurui conforms roughly to the Maracá ceramic tradition, the Paikipiranga to our Mazagão Phase, and the Emerillon, Palicur, and Marawan to the area included in the Aristé Phase. It seems reasonable to conclude that the archeological divisions must represent some major difference, perhaps of a linguistic nature, and that the ethnographic or linguistic reconstruction that most closely parallels it is more likely to approximate the aboriginal condition. Such archeological commentary makes it possible to recognize that the multiplicity of names present on some maps, like that prepared by Nimuendajú (Gillin, 1948, p. 800), and in the archive accounts represents a recent disruption rather than the aboriginal condition, and often a clan, village or chief's name rather than a tribal or linguistic unit.

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[36] A third possibility is that the Nheengaiba "tribes" are deculturated remnants of different Marajoara Phase villages. In view of the suggested origin of the Marajoara Phase, this interpretation fits the implication that the Nheengaiba were linguistically unusual in the lower Amazon.

One very interesting hint that the Rio Araguarí-Amaparí did function as a boundary line as suggested by the archeological situation is given by Harcourt (1613), who reported that the Indians on that river looked upon those from the Oiapoque area with distrust, they being strangers and therefore unpredictable in their behavior. Although it is possible to read more significance into such statements than is intended, this does not seem likely here in view of the archeological situation and the fact that intercommunication existed between other tribes separated by no greater distance than is involved here.

In respect to the cultural description of the Galibi and tribes in the northern part of the Territory, there is good agreement with the archeological evidence. It will be remembered that the definition of the Aristé Phase based on the archeology suggested a semisedentary culture, with the composition of the sites themselves indicating a village of individual family houses occupying a relatively large area, but seeming to represent little duration in time. Both Sites A–9 and A–12, Aristé Phase habitation sites, were located on small rises adjacent to a stream. Except for polished stone axes, the tools and weapons must have been made of wood or other perishable material. Although the pottery included a higher percentage of decorated types than similar pottery types in the Tropical Forest Phases on the islands, the general crudity and poor technical quality does not suggest that it was a specialized craft. One aspect that finds greater elaboration on the archeological than on the ethnological level is burial practices, which in this case involve cremation, with the ashes placed in pottery jars, usually ornamented with painted designs, and set on the floor of small caves or rock shelters. These were sometimes accompanied by offerings, particularly of glass beads.

The ethnohistorical accounts reveal a culture based on agriculture, hunting, and fishing, with villages frequently located on small hills and always near a stream or spring. Houses were individual or communal, and villages averaged about 50 people. Arrangements for concealment included narrow and winding paths. Houses were constructed of wood and thatch and occupied principally during the night. Clothing was at a minimum, but ornaments of feathers, shells and glass beads were profuse, and body painting in red and black was customary especially on festival occasions. Except for pottery, the material culture was primarily of a perishable nature. During the day, activities included hunting, fishing, garden clearing, basketry weaving, potterymaking, and the manufacture of bows and arrows, which are reported to be male occupations. Women did the gardening, prepared the food and drink, collected firewood, took care of the children, and waited on the men. Except for shamans, there was no division of labor except along sex lines. Social stratification was also absent. The head man of a community was the oldest male, and although his advice was respected there was no compulsion to act upon it. The life cycle included prenatal food taboos, the couvade, polygyny, with marriage being easily entered into or dissolved, relaxation of certain restrictions in old age, and cremation at death, without the preservation of the ashes. Beliefs in the supernatural were rudimentary and involved no offerings or sacrifices. Warfare was quite prevalent, motivated by a desire for revenge, which was partially accomplished by cannibalism practiced on the captives.

When the information from these two independent sources is compared, it is evident that except for the historical account being somewhat fuller regarding social and religious organization, there is a good agreement. The only item in the documents that does not parallel what can be demonstrated or inferred from the archeological remains is the failure to preserve the ashes of the dead, although the method of disposal of the body is cremation in both cases. This may indicate a breakdown of the aboriginal pattern soon after European contact. One interesting bit of negative evidence appears to strengthen the conclusion reached on slim archeological evidence that the stone alinements commonly found in the northern part of the Territory of Amapá are Aruã Phase and not Aristé Phase. With their interest in the spiritual life of the Indians, it is not probable that the Europeans would have failed to know about such structures if they had been built and used by the contemporary Indians.

When one turns to the dating of the sites producing glass beads, the problem of evaluation becomes more complex. Beads are obviously post-1500 and constitute evidence of European contact, but it would be desirable to know how far into the postcontact period the culture survived, since this might shed light on the rate of ceramic change. A review of the chronology and nature of the contact detailed on pages 556–566 reveals two points bearing on this question: one, the intensity of the contact, and the other, its localization. On the first point, it has been shown that the first hundred years following the discovery were occupied with commercial activities, which brought European goods to the Indians but probably had little other important influence on the aboriginal way of life. Settlement began in 1600 and continued peacefully until about 1620, with the plantations and forts concentrated in the mouth of the Amazon proper and in the northern Guianas. This brought more intimate contact with the Indians, but it seems to have been on a friendly, mutual-aid level, apparently involving no fundamental disturbance of the cultural pattern. However, the wars that filled the decade from 1620 to 1630, when the Portuguese rose to expel the other European powers from their footholds in the area, wrought considerable havoc on the aborigines. Large numbers of Indians were recruited or of their own choice joined the small European forces. As a result, village life was probably disrupted and the culture pattern so broken down that those who survived the battles must have found it difficult or impossible to reassemble the bits. The situation was not materially remedied when the Portuguese gained exclusive dominion, because they were famous for their slave raiding, and in addition sent punitive expeditions to subject tribes that showed resistance. Disease also took its toll from the first, but probably was more prevalent after 1600, with the beginning of close and extended contact. Between 1700 and 1800, widespread migration was characteristic, with the Indians on the islands fleeing to the Guianas, and with the removal of large groups by the Portuguese from and into the area.

The two facts that emerge from this summary are: (1) Of the area under archeological consideration, the most intensive and earliest European contact was in the region occupied by the Mazagão Phase; the Aruã and the Aristé Phase peoples were more remotely involved, having few if any early colonial settlements on their lands; and (2) the warfare from 1600 to 1630 must have destroyed almost completely the aboriginal culture of the Mazagão Phase or at least altered it so that it would be noticeably different from the precontact condition even as seen archeologically. This strongly suggests that the contact sites of the Mazagão Phase are not likely to be later than about 1630, although they may be as early as 1500.

The terminations of the Aristé Phase and the Aruã Phase are not as readily defined. Since European activity was less intense in these areas, the cultures may have been able to preserve their integrity for a considerably longer time, in fact conceivably into the 18th century on the islands at least. This raises the possibility that sites may lack trade materials and still be post-European in date. Although there is no archival evidence that less trading was done on the islands than in the south part of the Territory of Amapá prior to 1600, the seriated sequence of the Aruã Phase intersperses sites with trade materials between sites at which none are found. The large number of post-European sites in this Phase in contrast to the Aristé Phase and especially to the Mazagão Phase is further evidence of a longer survival for the Aruã. Phrased in guess dates, this means that whereas the Mazagão Phase contact sites may represent a period of about 120 years after A. D. 1500, the Aruã Phase contact sites probably span at least 250 years. The termination of the Aristé Phase probably lies somewhere between these two extremes.

It might be expected that some light would be shed on this situation by analysis of the trade materials from the sites. In view of its potential importance it is unfortunate that so little information is available on the type of beads used by different European powers at different periods for trading with the Indians. A considerable range of sizes, shapes, and colors were recovered, and samples were sent to Glenn A. Black, Kenneth Kidd, and Arthur Woodward for evaluation. Their reports (pers. corres.), made independently, agree in placing the period of distribution from early 17th to early 18th century, and suggest that the earliest date would be around 1650. It is immediately evident that this is out of line with the terminal date suggested above for the Mazagão Phase, and would imply that trade materials from 1500 to 1650 did not include beads, which is very unlikely. The most reasonable explanation for this situation appears to be that Black, Kidd, and Woodward base their estimate on the dates given to similar material excavated from North American sites, where extensive contact was of a considerably later date than in the mouth of the Amazon. Consequently, until more definite data can be obtained regarding the time of manufacture of the various bead types in Europe, evidence from this source must take second place to more specific local historical records.

IMPLICATIONS OF THE CULTURAL SEQUENCE AT THE MOUTH OF THE AMAZON

In tracing the origins and affiliations of each of the archeological Phases at the mouth of the Amazon, we have been led to distant parts of northern South America. Perhaps the clearest result of this research has been the conclusion that the cultures in the vicinity of this delta cannot be understood except as reflections of events taking place in vital centers elsewhere on the continent at an earlier time. As far as we can determine, there were no significant local innovations. Each successive archeological Phase is a culture with an independent origin that moved into the area from somewhere else, occupied it for a brief length of time, and then was displaced or absorbed by the next invader. The result is not a cultural continuity such as exists in parts of Peru, but rather the somewhat arbitrary assortment of cultures oriented into a temporal framework shown on figure 205. The relative positions of the archeological Phases have been determined from stratigraphy or from ceramic evidence of contact. The lengths of the bars represent differences in the relative duration of the cultures, computed on the basis of refuse accumulations (pp. 253, 421). Since the detailed archeological sequences and the evidence concerning the affiliations of the various cultures have been discussed at the conclusion of each of the three geographical sections into which this report is divided, only the highlights will be repeated here. The reader interested in a fuller account is referred to the more detailed discussions.

The archeological record at the mouth of the Amazon begins with the Ananatuba Phase, a pottery-making culture that appears to have arrived on Marajó Island after the beginning of the Christian era. Prior to this time the area was probably inhabited by preceramic groups, but nothing remains of their perishable culture to provide positive evidence of their presence. The arrival of the Ananatuba Phase represents the introduction of a more advanced level of culture, which appears to have been comparable to the Tropical Forest Pattern as it is known ethnographically. It does not, however, represent the origin of this type of culture, if we may judge by the technological level achieved in pottery making. Although the surfaces are not typically well finished, the vessels are not always symmetrical and most of the ceramics are plain, the product is well made and durable, and shows degree of competency in the handling and firing of clay and

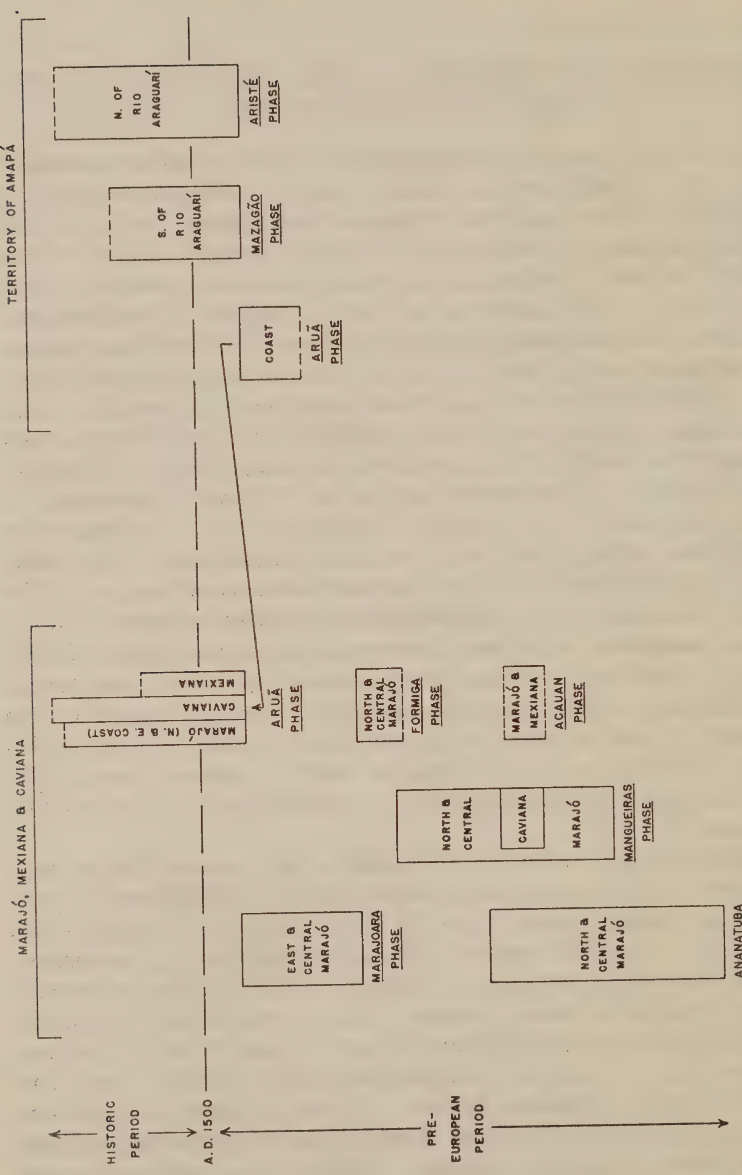
HISTORIC PERIOD
A.D. 1500
PRE-EUROPEAN PERIOD
MARAJÓ, MEXIANA & CAVIANA
EAST & CENTRAL MARAJÓ
MARAJOARA PHASE
NORTH & CENTRAL MARAJÓ
ANANATUBA PHASE
NORTH & CENTRAL
CAVIANA
MARAJÓ
MANGUEIRAS PHASE
MARAJÓ (N. & E. COAST)
CAVIANA
MEXIANA
ARUÃ PHASE
NORTH & CENTRAL MARAJÓ
FORMIGA PHASE
MARAJÓ & MEXIANA
ACAUAN PHASE
TERRITORY OF AMAPÁ
COAST
ARUÃ PHASE
S. OF RIO ARAGUARÍ
MAZAGÃO PHASE
N. OF RIO ARAGUARÍ
ARISTÉ PHASE

FIGURE 205.—The cultural sequence at the mouth of the Amazon. The different lengths of the blocks reflect the estimated relative duration of the archeological Phases.

in design execution far beyond what would be expected of a group just learning the art of pottery making. Three types of decorations occur: brushing with a bunch of twigs (Carmo Brushed), incision with well-defined motifs sometimes employing zoned cross hatching (Sipó Incised), and rarely, a band of red paint (Ananatuba Painted). The pattern of refuse accumulation suggests a village composed of a single, communal house, probably raised on piles. There is no evidence of the method of disposal of the dead. This culture appears to have been the sole pottery-making occupant of much, if not all, of Marajó Island at this early period, and the long duration of the villages on a single spot as well as the uniformity of the ceramic remains suggests a peaceful and undisturbed existence for many decades.

The termination of the Ananatuba Phase was brought about by its conquest and assimilation by the second culture to make its appearance on Marajó Island. The earliest sites of the Mangueiras Phase are found somewhat west of the Ananatuba Phase distribution and the two cultures appear to have existed contemporaneously for some time on different parts of the island. After an initial period of settlement, the Mangueiras Phase underwent an era of expansion, in which it spread briefly to southern Caviana as well as eastward and southward on Marajó. As a result of this expansion, it came into contact with the Ananatuba Phase and succeeded in dominating it. This may have been an initially hostile collision, but after assuming the role of conqueror, the Mangueiras Phase planted a settlement at the Ananatuba Phase village of J–7—Sipó and the two peoples lived side by side until cultural evidence of the Ananatuba Phase gradually disappears. The superiority of the Ananatuba Phase pottery was recognized by the conquerors, and both vessel shapes and techniques of decoration were copied by them. Pottery here reveals a fascinating tale of acculturation, which may have been paralled in other more perishable traits (pp. 218–221). The unusual susceptibility of the Mangueiras Phase to such influence is further attested by pottery features it took over at an earlier time when it had some contact with the Acauan Phase.

The Mangueiras Phase is distinguished from its predecessor by both ceramics and settlement pattern. Although characterized by the same qualities of crudity as Ananatuba Phase wares, the pottery differs in surface color and in other details. Decoration consists of brushing (Croarí Brushed, Bacurí Brushed), scraping (Pocoató Scraped), red coloring of the surface (Esperança Red), and after Ananatuba Phase contact, a more or less accurate copy of the latter's Sipó Incised (Pseudo-Sipó Incised.) Mangueiras Phase villages appear to have been composed of one or more communal houses. There is no evidence of burial pattern.

Partly contemporary with the Mangueiras Phase, and possibly also with the end of the Ananatuba Phase, is the Formiga Phase. Like its two predecessors, it belongs to the Tropical Forest Pattern of culture. Pottery is simple, sherd tempered, and even less formalized in decoration, with brushing (Saúba Brushed) the most consistent technique. Contact with either the Ananatuba or the Mangueiras Phase is indicated by the presence of Sipó Incised motifs on occasional sherds (Pseudo-Sipó Incised), and another as yet unidentified influence is reflected in the sudden appearance of finger pinched surfaces (Mucajá Corrugated). The village composition is less consistent than in the other Phases but appears to have included several large houses, which in two of the three villages excavated, were built on low artificial mounds. In contrast to the two previous Phases, Formiga Phase villages are located on the *campo* rather than in the forest. One burial, a cremation without associated artifacts, was encountered in the village refuse.

For none of these cultures do we have any specific evidence of derivation. They appear on Marajó Island fully developed, and cannot therefore be indigenous. They have not been found on Mexiana, Caviana, or in the Territory of Amapá with the exception of a single Mangueiras Phase site already mentioned. Scattered pottery samples that have been collected at various points along the Amazon (Barbosa Rodrigues, 1876–78) seem to indicate that incising is the typical form of decoration on the archeological horizon. We would like to hazard the guess, in lieu of a more substantial basis for an opinion, that these early cultures on Marajó are the result of a slow diffusion of the Tropical Forest Pattern, which was characterized ceramically by sherd tempering and brushed and incised decoration, from the west to the east along the Amazon.

During the time that the above events were taking place on Marajó Island, there is only one indication of a pottery-making culture on the other islands or in the Territory of Amapá. This is the Acauan Phase, the major site of which is on Mexiana. The pottery of this culture is remarkable for the abundance, variety, and complexity of its decoration, which includes excision (Acauan Excised), incision (Carobal Incised), and corrugation (Floripes Corrugated). Although there is no stratigraphic evidence of its temporal position, certain features of the unclassified decorated pottery from early Mangueiras Phase sites suggest influence from the Acauan Phase, and on this basis the two cultures have been considered contemporary. After a brief sojourn in this area, the Acauan Phase disappears. The reason for this is unknown, but no evidence exists to indicate that its removal was precipitated by hostile relations with other tribes.

Except for this single, short-term occupation by the Acauan Phase, the period of the Ananatuba, Mangueiras, and Formiga Phases on Marajó is not represented by comparable pottery-making groups in the Territory of Amapá or on Mexiana and Caviana. It must be concluded either that these areas were unoccupied or that they were inhabited by hunting, fishing, and gathering groups. The reason for this is uncertain, and does not appear to be related to the suitability of the land for agriculture, since Marajó is not superior to these other areas in this respect. One is tempted to fall back on the conclusion that there was little population movement and consequently little population pressure exerted by tribes with a Tropical Forest type of culture in this part of South America until almost the historic horizon. Indeed, the remaining history of the cultures at the mouth of the Amazon would seem to bear this out.

Next in the Marajó Island sequence is the Marajoara Phase, which has such close and numerous affiliations with the northwestern part of South America as to suggest a direct derivation from that region (figs. 146, 148). All the archeological evidence indicates that it represents a culture of the Circum-Caribbean or Sub-Andean level of development, with a technology and sociopolitical organization far in advance of its predecessors and successors in the lower Amazon area. The large earthworks erected as habitation sites and as cemeteries imply the organization of labor and of leadership to direct it. Social stratification is more directly revealed in the differential treatment of the dead. Division of labor is also suggested by the elaborate and varied pottery art, which combines a variety of decorative techniques—incision (Guajará Incised, Anajás Plain Incised), excision (Ararí Plain Excised), scraping (Goiapí Scraped) and painting (Joanes Painted)—with a variety of slipped and double slipped surfaces (e. g., Pacoval Incised, Anajás Red Incised, Ararí Double-Slipped Excised). The result is an array of wares, some of which demonstrate a degree of skill and craftsmanship that leaves no doubt that experienced workmen were involved in their production. Other indications of the relative richness of the culture are found in the numerous pottery artifacts, including stools, spindle whorls, ear plugs, spoons, and tangas. Although there are no temples, the existence of idols and of elaborate burial practices indicates a well developed religious system.

This culture appears to have arrived on the Island of Marajó at the peak of its development, and its local history as revealed in the archeological record is one of slow deterioration. The pottery becomes less varied and elaborate, and the complex types of decoration that remain become less competently done, implying the loss of pottery making as a specialized occupation. The breakdown of the social structure is reflected in the disappearance of differential treatment of the dead. These and similar clues left in the archeological record permit us to trace the path of deculturation to a point where the once elaborate Marajoara Phase remains come to resemble archeologically those of the Tropical Forest Phases.

In attempting to discover the cause for this situation, the most obvious line of investigation is environmental. An analysis of the subsistence resources of the tropical forest in general, and of Marajó Island in particular, leads to the conclusion that these are not sufficient for the maintenance of a highly developed culture. The demands of the Marajoara Phase were thus out of balance with the normal food producing capacity of the environment, and when the latter was taxed beyond its resources, the resulting impoverishment was reflected in the content of the culture. Since the environment could not be molded to meet the demands of the culture, the culture had to submit to the limitations of the environment, which meant a simplification to a level that was adapted to the subsistence resources.[36a] This is what happened to the Marajoara Phase, and this was the state it had finally reached when the island was invaded by the next and final archeological Phase.

Of the many new traits introduced into the lower Amazon by the Marajoara Phase, only two—secondary urn burial and painting of pottery—ever became an important part of the Tropical Forest Pattern. The Marajoara Phase is the first in which painting becomes a prominent method of ceramic decoration, the primary colors in this case being red and black, employed singly or in combination on a white-slipped surface (Joanes Painted). Secondary burial in large urns, with the bones of the deceased painted red, makes its appearance as the method of disposal of the dead. The fact that these traits are not early in the archeological sequence at the mouth of the Amazon and that they have their initial association with a culture that is unquestionably non-Tropical Forest in character suggests that they may not be of Tropical Forest origin or even old in the Tropical Forest area of South America.

While the Marajoara Phase was feeling the effects of the tropical forest environment on Marajó Island, the Territory of Amapá received its first invasion by a pottery-making culture, the Aruã Phase. This is the only group that occupied the lower Amazon whose origin can be traced to the north. In keeping with this, the greatest concentration of sites is in the northern part of the Territory of Amapá. Those so far reported consist primarily of stone alinements, which the absence of habitation or cemetery association suggests had a ceremonial significance. Pottery of the Aruã Phase is sherd tempered. Decoration is rare and most frequently in the form of applique ribs or nubbins; other types are brushing (Nazaré Brushed), simple, broad incisions (Aberta Incised), and painting. Aruã Phase villages are reconstructed as having been typically composed of a single, relatively small, communal house.

[36a] For a more detailed discussion of the relationship between Tropical Forest culture and environment, see Meggers, 1954.

After occupying this part of the mainland for a short time, the Aruã Phase abandoned it for the islands in the mouth of the Amazon. There are indications that this was not a voluntary removal, but an expulsion brought about by the advent of another group, the ancestral Mazagão-Aristé Phase. To judge from the number of sites and the amount of ceramic change, the duration of the Aruã Phase on Mexiana and Caviana Islands was considerably longer than it was in the Territory of Amapá. A new trait appears, namely, secondary burial in large urns placed in groups on the surface of the ground. Offerings in the form of small vessels, stone axes, and beads were occasionally included. While these cemeteries may occur in the Territory of Amapá as well, their failure to be discovered seems remarkable in view of the numerous, better-concealed cemeteries of the later Phases that have come to light in that region.

Shortly after becoming established on the islands, the Aruã Phase shows evidence of European contact in the form of glass beads associated with burial vessels. The absence of any other effect on the culture that can be discerned archeologically over a considerable period of time suggests that there was at first little active disturbance of the aboriginal life on Mexiana and Caviana. This seems to be confirmed by the absence in archives of any but casual mention of these islands. However, the Aruã on Marajó attracted more attention, probably because their island was never out of sight as the Portuguese laid their plans for achieving supremacy in the Amazon. A little more time, however, was all that the inhabitants of Mexiana and Caviana gained. Bit by bit they were decimated, by disease, by removal to other parts of the Amazon, by slave raids, by warfare, and by intermarriage, until by the middle of the 19th century no Aruã were left.

There are several points concerning the Aruã Phase that are worthy of particular note. One is the stone alinements. This trait is without parallel in the regions around the mouth of the Amazon. One good reason for its absence on the islands immediately comes to mind, namely, the absence of stone in sufficient quantity. However, there is more to such a practice than the availability of stone. Assuming that the function is ceremonial, it implies a religious development of some degree of formality, with special rituals and this feature supports the specific material evidence linking the Aruã with the Circum-Caribbean area.

The origin of the Aruã Phase trait of painting is obscure. It becomes well developed and common only in very late post-European sites, and is most readily explained as the result of contact and stimulation from the Aristé Phase. Documentation can be found for the existence of such contact, and supplementary evidence for it can be seen in vessel shape. This conclusion leads to a circularity of the reasoning, however, since a case can also be made for the development of painting in the Aristé Phase as the result of Aruã Phase influence. The two manifestations are undoubtedly related. The main problem, and one which cannot be answered on the present evidence, is: From where did the idea of painting come? If the Aruã Phase came in contact with the Marajoara Phase on its arrival on the islands, it might have acquired the technique of painting from the latter. However, if this had been the case, painted pottery should make its appearance immediately after the arrival of the Aruã on the islands, rather than a hundred or so years later, toward the end of the Phase.

Into the Territory of Amapá on the heels of the fleeing Aruã came a culture we have designated as the ancestral Mazagão-Aristé Phase. The fact that the early pottery of what soon became distinguishable as two separate Phases—the Aristé north of the Rio Araguarí and the Mazagão south of that river—has been found in most concentration at both extremes of the area makes it difficult to reconstruct the direction of movement, but what is known of the other Guianas seems to rule them out as a place of origin and to put the preference on the lower Amazon. Indeed, it is less difficult to see a relationship between the incised styles of this area and Uxy and Uaça Incised, than it is to find a resemblance between lower Amazon styles and those of the early Phases on Marajó Island.

The Mazagão Phase, which occupied the region between the Rio Araguarí and the Rio Jarí, is characterized ceramically by the use of sand and crushed quartz temper, and later of *cariapé*, it being the only Phase in which the latter temper was used. Decoration is typically by incision, with a slight amount of scraping (Jarí Scraped) present at the earliest sites and occasional crude modeling. The village area suggests that the houses were of the individual family type. Burial was secondary, in small jars interred just below the surface of the ground and occasionally associated with miniature vessels or glass beads.

The Mazagão Phase did not enjoy the undisturbed existence that appears to have been the lot of the earlier groups at the mouth of the Amazon. Not long after its settlement in the area, it received a strong influence that was reflected in a sharp alteration in the style of its incised decoration, which changed from the somewhat casually executed Uxy Incised to the simple, parallel lines of Piçacá Incised and the precisely drawn, chalk-filled lines of Anauerapucú Incised. A further event to upset the even pursuit of existence was the advent of the Maracá tradition, remains of which are found concentrated on the Rio Maracá, near the center of the Mazagão Phase territory. That there was some contact between the two groups is indicated by the discovery in Mazagão Phase cemeteries of anthropomorphic urns copying the Maracá style. However, the copies are not accurate, suggesting that there was not opportunity for detailed observation, and implying that relations between the two groups were not close.

The Aristé Phase, once it moved to the northern part of the Territory of Amapá, appears to have lost all contact with its "relative" to the south. The earlier sand temper and incised (Uaçá Incised) or scraped (Flexal Scraped) decoration are replaced by sherd tempering and painted designs (Aristé and Serra Painted). Villages appear to have been composed of individual family houses. Burial practice was cremation with the remains placed in small vessels grouped on the floor of a small rock shelter or cave, or in a cave artificially hollowed out of the earth. Burial gifts were rare, but sometimes included a few glass beads.

The Aristé Phase is significant in that it represents the second important appearance of painted decoration (contemporary with the Aruã Phase) at the mouth of the Amazon, and this (as in the Aruã Phase) becomes well developed only in post-European times. In sites seriating prior to contact, the designs are primarily confined to broad bands of painting around the rim or vessel circumference. Only in the late period rectilinear and curvilinear motifs make their appearance and painting takes on some degree of complexity. The Aristé Phase also establishes cremation as an important method of disposal of the dead, although this was briefly employed earlier by the Marajoara Phase just prior to its termination.

The northern part of the Territory of Amapá appears to have been less strategically placed both in regard to aboriginal routes of migration and European interests than the south. There is no evidence of the kind of intrusions to which the Mazagão Phase, restricted to the southern part of the Territory of Amapá, was subjected, and which are reflected in abrupt changes in the pottery of the later part of the Phase. The history of European activity in the Guianas and the Amazon suggests that the Aristé Phase in the north enjoyed a considerably longer period of aboriginal existence than did the Mazagão Phase, which was unfortunate enough to provide the main battlefield for the Portuguese struggle for mastery of the Amazon.

The data and inferences just summarized provide the basis for wider interpretations of the development and dispersal of culture in the greater Amazon area. Perhaps the best documented conclusion that can be set forth is that neither Marajó Island nor any of the other areas included in this investigation had any role in the origin or development of any of the cultures or traits that have characterized them archeologically. Rather, they were frequent and long-term "borrowers" of cultures and traits from near and far. Another fairly reliable result is the complete absence of any indication along the coast of the mainland that it was part of a major route by which the Tropical Forest Pattern of culture spread down from the north and up the Amazon as has been suggested by Steward (1949 c, p. 762). This conclusion is based on negative evidence: the absence of northern affiliations for any of the archeological cultures except the Aruã, and the general lateness of the total sequence encountered at the mouth of the Amazon. Expressed in positive terms, this conclusion leads to the following reconstruction of the diffusion of the Tropical Forest Pattern.

Up until relatively recent times, the area around the mouth of the Amazon was either unoccupied or occupied by non-pottery-making cultures. The latter case seems more likely, in view of the good hunting and fishing opportunities, but the perishable nature of the material culture rules out the likelihood of any positive identification. The first cultures of the Tropical Forest Pattern, characterized archeologically by settled villages and the manufacture of pottery, make their appearance on the Island of Marajó at a time estimated as somewhere around A. D. 700. Since these occur earlier on Marajó than in the Territory of Amapá, the introduction could not have come down the coast from the north. Nothing is known of the temporal position of ceramic cultures south of the Amazon, but what general knowledge is available does not suggest that any innovations are to be expected from that direction. The known antiquity of pottery making in western South America and the vitality of that area as a general source of diffusion over a long period of time makes it seem a safe guess that the early Tropical Forest Phases on Marajó Island represent the result of a slow filtration of the Tropical Forest Pattern of culture from west to east down the tributaries and along the main course of the Amazon River. That this was a gradual diffusion, probably implemented by the migration of a few groups into what had formerly been Marginal areas, is suggested by the situation at the mouth of the Amazon. Here the Territory of Amapá presumably supported Marginal cultures for a considerable period of time after Marajó Island had been taken over by cultures of the Tropical Forest Pattern. It is perhaps a significant fact, in what is otherwise almost wholly unsupported hypothesis, that the characteristic technique of decoration in the earliest pottery horizon found at the mouth of the Amazon to date is a broad-line incision, frequently employed in zoned patterns. Although the resemblance is neither close nor detailed, the pottery known as Sipó Incised shares some of the features of early pottery horizons in Peru and Central America. Strong (1943, p. 32) along with others has commented upon the similarity between the pottery of Playa de los Muertos in Honduras and the Chavin horizon in Peru. It seems more than coincidence that the pottery decorations of the early horizons in these three widely separated areas should all include a type of incision utilizing with frequency broad lines and zoned patterns. The Ananatuba Phase is, however, about 1,000 years later than Chavin and so if any relationship does exist, it has been greatly diluted by time and space. None of the subsequent archeological cultures at the mouth of the Amazon reveal any affiliation with the Peruvian Andes. Tello's interpretation of Chavin and Marajoara as having a common source (Willey, 1951, p. 105) does not seem warranted, now that both the total content of Marajoara culture and its position in the chronological sequence are better known. While the Marajoara Phase shares many ceramic features with the general Andean area, these features appear to be most typical in cultures that are later in time and farther north in space than the center of the Chavin horizon, and that have never been suggested as having affiliations with Chavin.

If this reconstruction of the spread of the Tropical Forest Pattern is correct, it points to the western part of the present Tropical Forest area as the one in which most of the diagnostic material culture traits arose. Our conclusion that the basic direction of movement was eastward (down river), with a source of origin in or near the Andean foothills (fig. 206) coincides with that reached by Cruxent (1951, p. 153) on the basis of completely unrelated evidence. In analyzing the possible sources of Venezuelan cultures, particularly La Cabrera and Barrancas, he outlined three potential routes of diffusion from a source of the Peruvian Andes:

> (a) descent of the Amazon, followed by movement up the Río Negro and down the Orinoco; (b) more directly, from northern Peru through Ecuador and Colombia, so as to enter Venezuela from the west: and (c) descent of the Amazon to its mouth and then movement north along the coast to eastern Venezuela The first two of these appear the more probable . . .

Both routes (a) and (b), which Cruxent favors, are generally eastward and thus coincide with our evidence as to the prevailing direction of movement of culture in northern South America, although the case seems to be somewhat stronger for route (b).[37] The third alternative,

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[37] Loven (1935) also traces an eastward diffusion of a number of traits from an origin in Peru, Ecuador, and Colombia into Venezuela or the Guianas and then into the Antilles (e. g., pp. 209, 664–665).

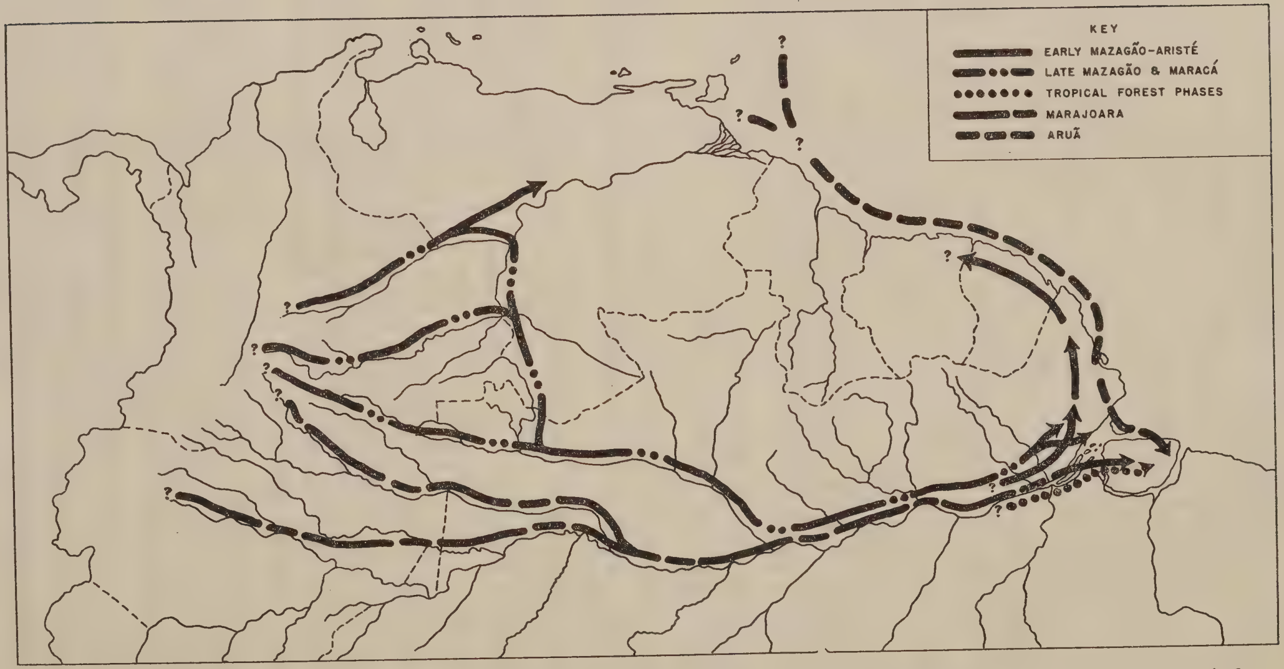
KEY
EARLY MAZAGÃO-ARISTÉ
LATE MAZAGÃO & MARACÁ
TROPICAL FOREST PHASES
MARAJOARA
ARUÃ

FIGURE 206.—Routes of migration and diffusion in northern South America reconstructed from the evidence of the affiliations of the archeological Phases at the mouth of the Amazon.

descent of the Amazon followed by movement northward along the coast, receives no support from the archeological evidence at the mouth of the Amazon. The Aristé Phase has slight affiliations as far north as Dutch Guiana, but fades out there. In any case, it has no resemblance to the cultures of eastern Venezuela.

We are on relatively secure ground if we consider the three earliest archeological Phases at the mouth of the Amazon as representative of the early content of the Tropical Forest Pattern. Although these are late in actual time, by the theory of diffusion they should reflect one of the early impulses that began the movement of traits out from their center of origin. On this assumption, we can conclude that sherd tempering, and incised, brushed, and scraped decoration of pottery are early Tropical Forest traits. By the same token, the absence until later times of *cariapé* tempering, painted and modeled decoration of pottery, and secondary urn burial indicates that these are late traits and if they are of Amazonian origin, it was not in the eastern part (cf. Willey, 1949 b, p. 143; Howard, 1947, p. 85). This local situation is confirmed to some extent by the fact that archeological material recovered from scattered sites in the Amazon area (see particularly Barbosa Rodriques, 1876–78) is generally characterized by incised decoration, while on the ethnographic horizon, pottery decoration is almost exclusively by painting. Although this sequence may not be universally established, we see no evidence that painting is of greater antiquity than incision, as has been suggested (Howard, 1947, p. 86). Nordenskiöld (1930, p. 34), on the basis of familiarity with lowland Bolivian material, suggested an evolution in ceramic decoration from modeling and incision to painting, which he attributed to influence from the Andean area. Our evidence indicates that, although this may be correct for the lowland Bolivia, it is not strictly true for more distant parts of the Amazon. The actual sequence at the mouth of the Amazon was from incision to painting and modeling, with the latter partly contemporary but becoming an important method somewhat later than painting.

In addition to these changes in technique of pottery decoration, there is archeological evidence of alteration in other aspects of the culture. There is a notable lack of uniformity between some of the Phases in village permanency. The two earliest cultures on Marajó Island, the Ananatuba Phase and the Mangueiras Phase, are represented by deposits of village refuse up to a meter in depth, and conversion of this into the number of years estimated as necessary to produce them (tables E and F) gives figures of up to 147 years per village, with durations of 50 or more years being more typical than shorter terms of occupancy. By contrast, the late archeological Phases, which include the Mazagão and Aristé Phases in the Territory of Amapá and the Aruã Phase on the islands, produced refuse deposits that never exceeded 45 cm. in depth and were most frequently less than 10 cm. thick. In the case of the Aruã Phase, conversion of this figure into years gives a maximum of 19 years for the duration of an individual village (table G). Our investigations in British Guiana in 1952–53 seem to reveal the same decrease in village permanency in that area. The explanation for this situation is not clear. One possibility not yet sufficiently investigated to permit an evaluation of its significance lies in the fertility of the soil in a tropical forest situation where the agricultural technique is by slash and burn. The initial occupant of a given area would have the advantage of being able to exploit completely virgin land for agricultural purposes, and this might have given the fields a higher productivity for a longer time than could be later achieved even after a period of fallow in which the area returned to high secondary growth. It is a fact that the fresher the soil, the higher the production (Wagley, 1953, pp. 67–68), but the critical limit above which there is no further increase in fertility has not been established. Another possibly significant factor in the case of Marajó Island is the relatively abundant supply of wild game and fish, which properly exploited could support a small sedentary population for a considerable period of time.

Before any reliable answer can be given to this problem it will be necessary to know how widespread this decline in village permanency is throughout the Tropical Forest area and under what specific environmental conditions it has occurred. It may turn out to reflect simply the introduction of new concepts of the supernatural, which lead to the abandonment of the village at the death of an occupant. Another cultural factor that may be involved is a difference in emphasis placed on the desirability of having the fields readily accessible to the village. Where this was considered important, the village would be moved as the nearby fields were exhausted; where it was not, villagers might go considerable distances to raise and harvest their crops.

Another aspect of the archeological situation suggests an alteration in diet. This is the presence of griddles only in sites of the Aruã Phase, which is one of the latest at the mouth of the Amazon. This implies an absence until this time of cassava bread, which is a staple food among the aboriginal peoples of the Guianas today, and suggests that this is a relatively recent method of utilizing bitter manioc flour in this part of South America. It is not necessary to conclude that bitter manioc was not grown, since it can be consumed in other forms (e. g., Lipkind, 1948, pp. 181–2), but it is also possible that only the sweet variety was raised by the first food-producing Phases.

Although the botanical situation in the Amazon drainage with reference to plant origins is about as little known as the archeology, Sauer (1950, pp. 507–509) has discussed the problem of the limited distribution of bitter manioc as compared to sweet manioc. He notes that while both sweet and bitter manioc occur in the tropical regions of Brazil, Venezuela, and the West Indies, only the sweet form was found in the upper tributaries of the Amazon Basin when the Spanish first arrived there. Sauer's conclusion is that climate alone does not account for the more restricted distribution of bitter manioc, and that this must indicate that the bitter variety was either a late form which did not have time to diffuse or there was some lack of receptiveness to it on the part of some cultures. If this distributional evidence of lateness cannot be conclusively demonstrated by the archeological results, it is at least not in disagreement with them.

A nonceramic trait of material culture whose history can be traced archeologically is the use of stone axes. These do not occur in the three earliest Phases on Marajó Island. Their appearance coincides with the arrival of the Marajoara Phase on Marajó and of the Aruã Phase in the Territory of Amapá. Only in the later Aruã Phase on the islands and in the Aristé Phase in the Territory of Amapá, however, can they be considered relatively abundant. Since the availability of local stone did not alter, this must be considered as a purely cultural innovation. It is interesting to note that stone axes are late rather than early in the cultural sequence at the mouth of the Amazon.

Having considered the evidence as it pertains to the content and to the place of origin and direction of diffusion of the Tropical Forest Pattern, there remains the problem of how this type of culture originated and how it is affected by the natural environment. The one and only important effort to reconstruct the origin of Tropical Forest culture has been made by Steward (1949 c, p. 762), who derived his theories partly from a comparison of the cultural similarities and differences between the Circum-Caribbean and Tropical Forest cultures, and partly from the evidence of what occurred in the Circum-Caribbean area under the disrupting influence of European contact (op. cit., pp. 765–766). Steward's hypothesis was that the Tropical Forest Pattern developed by degeneration from Circum-Caribbean culture, retaining the general technology of the latter but losing the more advanced sociopolitical and religious traits, which could not be maintained in adapting to the subsistence requirements and limitations of the new environment. Two routes of movement were postulated, by which this declining culture spread: (1) down the Guiana coast and up the Amazon, and (2) up the Orinoco and down the Negro. Since Steward placed primary emphasis on the first of these routes, our archeological investigations are strategically located to test the validity of this reconstruction. The evidence they provide is negative both concerning this route of movement and this derivation of the Tropical Forest Pattern of culture. As already noted, no evidence was found either of a direct nature (in the form of sites) or of an indirect nature (in the form of influences on the local cultures) to support the conclusion that an important route of migration passed down the coast of the mainland and up the Amazon River. Nor do the earliest pottery-making cultures give any indication of having deculturated from a more advanced level. Furthermore, the lateness of this type of culture at the mouth of the Amazon rules out any possibility that the Tropical Forest Pattern could have originated either by evolution or deculturation in this part of the lowland forest area.

Although there appears to be no evidence in support of Steward's hypothesis deriving Tropical Forest culture by deculturation from the Circum-Caribbean level in northeastern South America, this, of course, does not automatically rule out the possibility such a process could have taken place at the opposite end of the continent. We feel, however, that such theory is not needed to account for the similarities that exist between the two culture areas, and that to resort to a process of degeneration is to move on less safe ground than if one were to think instead in terms of evolution. Looking at the problem from this point of view, the general Andean area of Peru, Ecuador, and Colombia becomes the center of origin and dispersal of generalized and specific traits, ranging from the idea of agriculture to special techniques of metallurgy.[38] These moved north and south within the Andean area and probably also eastward, beginning probably in very early times. In the Tropical Forest area only the earliest and most basic inventions were accepted and adapted for local use. Otherwise, the culture is mainly composed of special items suited to the requirements and the materials available in the forest and river environment. These same early inventions—agriculture and pottery—diffused to the Circum-Caribbean area, but here environmental limitations are less severe and cultural evolution was able to progress further, although it did not reach the heights of technological and political development attained in the Central Andes. Steward (1949 c, p. 762) made a similar suggestion as an alternative to his basic hypothesis of the origin of Circum-Caribbean and Tropical Forest culture, namely, "that the Circum-Caribbean cultures were in reality Tropical Forest type cultures with an Andean overlay" instead of the reverse, but he gave this possibility little consideration.

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[38] Willey (1949 b, p. 161) concluded that this was the primary center of South American pottery origins.

This brief sketch suffers from oversimplification. There were undoubtedly innumerable and constant interchanges between individual tribes in all of the areas concerned, so that the place of origin of many traits has been obscured. It seems doubtful, however, that any other part of the South American continent will produce a sequence of the same antiquity and the same evolutionary completeness as has been outlined in the Andean area, and a reasonably safe guess that this general area stimulated the evolution attained to a lesser degree in neighboring regions. Although proof is lacking at this time, we would prefer to see the Tropical Forest Pattern as having evolved from an earlier hunting, fishing, and gathering culture with the aid of techniques diffused from the west where a similar evolution had taken place some time before. We do not believe that the Tropical Forest Pattern as a whole is derived by deculturation from the Circum-Caribbean level of development, although there can be no doubt that some of the tribes now falling into this classification are the end result of the unsuccessful penetration of the lowland forest by a more advanced culture.

If Steward's hypothesis for the origin of the Tropical Forest Pattern of culture does not find support in our archeological evidence, the foundation of his theory, namely that a culture of the Circum-Caribbean or higher level of development cannot maintain its advanced sociopolitical organization in the face of the limited subsistence potential of the tropical forest (Steward, 1948 a, p. 13), finds an excellent demonstration in the fate of the Marajoara Phase. This culture arrived on the Island of Marajó with every indication of possessing a culture of the Circum-Caribbean or Sub-Andean level of development, with an advanced sociopolitical organization characterized by occupational division of labor, social stratification, and well-defined leadership. The archeological record reveals that in the tropical forest environment of Marajó Island this culture underwent a gradual but persistent decline, in which those traits more advanced than the Tropical Forest level were lost. Although largely "non-material," they are reflected in such material ways as the loss of differential treatment of the dead, and the disappearance of complex and time-consuming techniques of pottery ornamentation.

The Marajoara Phase is a particularly good case for the demonstration of this leveling effect of the tropical forest environment, since all other possible causes can be eliminated by comparative evidence. Were the Marajoara Phase the only intrusive culture, it might be argued that this transplantation in itself was the cause of the decline. But, since no fewer than four other cultures made the same transfer successfully, this reasoning cannot be accepted. Although isolation might be evoked here to account for the decline, this could not be used to explain the same result of other similar penetrations of the lowland forest (e. g., Steward, 1949 c, pp. 759–760), and it is highly probable that a single cause is behind them all. Having seen the environment, analyzed the archeological cultures, and observed the modern problems of maintaining a productive subsistence economy, we are thoroughly convinced that the limited potentiality of the tropical forest environment for permanent local food production is the answer.

The bearing of the archeological record at the mouth of the Amazon on these general and theoretical interpretations of the prehistory of lowland South America, which had been derived primarily on ethnographic evidence, is perhaps the most important outcome of the 1948–49 fieldwork. There is another result, however, of more local significance, although it may represent a situation that was duplicated over a larger area. This is the sharp contrast between the archeological picture of aboriginal Brazilian Guiana and that reconstructed from ethnographic and archive sources. The region between the Rio Oiapoque on the north and the Rio Jarí on the south produced three distinct archeological Phases, the Mazagão Phase, the Maracá Phase, and the Aristé Phase. Each of these is internally consistent and suggests a homogeneous, well-integrated unit that does not seem possible without corresponding linguistic and tribal unity. However, from the time of the earliest identifications in the 17th century, the historical records seem to reflect only diversity, which at its most extreme form identifies each river as inhabited by a separate group. Careful analysis can resolve a great deal of this contradiction. In the early records, there appears to have been a confusion of the names of villages or headmen for tribal or "national" differences, partly as a result of linguistic difficulties and partly because of a lack of understanding on the part of the Europeans of the aboriginal social and political systems. In more recent times the Guianas became a refuge that attracted tribes of different linguistic, tribal, cultural, and historical background from near and distant parts of the Amazon basin, giving a real tribal and linguistic diversity, but one that is unrelated to the archeological, pre-European horizon.

The realization of these situations resolves much of the conflict between the archeological and ethnographical pictures, but not all. What remains forces us to raise the question as to what an archeological culture or "Phase," as used throughout this report, actually does represent in ethnographic terms. When he is dealing only with the precontact horizon, it is easy for the archeologist to assume that his cultural units with temporal and spatial distribution correspond to "tribes," which, on the ethnographical level, are linguistic or more or less loosely integrated sociopolitical units. This correlation can only be tested on the historical horizon. Sometimes it is confirmed, as it appears to be in the case of the Aruã. However, at other times there is the lack of correspondence mentioned above. The Aristé Phase especially seems to include several distinct linguistic groups, which imply tribal differentiation. This appears to indicate that a homogeneous archeological complex can represent several tribes, which are not only sociopolitically distinct but also linguistically unrelated.

The conclusion that tribal or linguistic divisions do not necessarily correspond with material cultural ones was confirmed during our archeological research in the interior of British Guiana in 1952–53. Here we encountered Indians who considered themselves members of different tribes, linguistically distinguished by anything from a minor dialectical variation to a separate linguistic stock, but which exhibited no greater difference in material culture than might be found in separate villages within the same tribe. This being the case, the apparent lack of correlation between the historic and the prehistoric horizons in the Territory of Amapá can be understood. It would be interesting and perhaps significant to discover what sets the areal limits on homogeneity in ceramic style and other aspects of material culture, since the barriers do not appear to be of a linguistic or tribal nature. An ethnologist who would view living groups as "archeology alive" and conduct a material culture survey along archeological lines could make an important contribution to the useful integration of archeological and ethnographical results.

The Tropical Forest Area of South America is one of the least known regions of the New World, archeologically speaking. It also contains the last large concentration of unacculturated or slightly acculturated aboriginal groups. Consequently, it provides an unrivalled opportunity for archeologists and ethnologists to collaborate in the solution of these and other problems that will not only improve our understanding of local cultural development, but also have broader theoretical significance. In many parts of North America ethnographic information needed for an adequate archeological interpretation has long since vanished with the acculturation of the living representatives of the cultures. We have a chance in South America to profit by this example and to record the information that hindsight has shown to be essential. If archeologists and ethnologists will develop an awareness of the kind of assistance they can render to each other, then the only result can be profit to both specialties and the advancement of the general field of anthropology.

In attempting to interpret the cultural sequence at the mouth of the Amazon into the larger framework of the development and diffusion of culture in the continent of South America, we have pushed beyond the demonstrable into the hypothetical. We have done so because we have found the hypotheses of those who have preceded us valuable and stimulating leads, and if we have shown some of them to be wrong it is because we have had evidence at our disposal that was not available before. It is our hope that our tentative reconstructions will be similarly suggestive to others, and will stimulate them to go in search of the facts in the unknown regions of lowland South America. With each theory that is corrected, the science of anthropology takes another step forward.

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APPENDIX (TABLES 1–52)

TABLE 1.—*Frequency of pottery types in surface collections and stratigraphic excavations at sites of the Mazagão Phase (fig. 23)*

Pottery types	Site A-1 (Piçacá Occupation)		Site A-2—Lauro Surface and Broadside		Site A-2 (Lauro stratigraphic excavations)										Site A-3 (Piçacá Cemetery)		Site A-4 (Valentim Cemetery)		Site A-5—Cafezal (Mazagão Phase Occupation)		Site A-6 (Ilha das Igaçabas of Igarapé do Lago)		Site São João.		Site Bom Destino		Site Alto Alegre		Site Uxy	
					Cut 1: 0–15 cm.		Cut 1: 15–30 cm.		Cut 1: 30–45 cm.		Cut 2: 0–15 cm.		Cut 2: 15–30 cm.																	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Mazagão Plain	166	32.0	599	68.6	127	59.0	68	79.2	22	76.0	149	67.5	54	70.1	1,033	80.8	96	22.1	309	50.4	280	35.8	20	32.8	35	40.3	30	54.5	20	44.5
Camaipí Plain	42	8.1	45	5.2	16	7.4	2	2.3	1	3.4	13	5.9	2	2.6	49	3.8	117	27.0	97	15.9	253	32.4	---	-----	----	-----	---	-----	---	-----
Vilanova Plain	262	50.6	152	17.4	57	26.4	11	12.8	5	17.2	48	21.7	18	23.4	99	7.7	169	39.0	184	30.5	218	27.9	---	-----	----	-----	---	-----	---	-----
Anauerapucú Incised	7	1.3	27	3.1	6	2.8	----	------	----	------	2	.9	----	------	81	6.3	22	5.1	2	.4	----	------	---	-----	----	-----	---	-----	---	-----
Piçacá Incised	39	7.6	14	1.6	4	1.9	----	------	----	------	2	.9	----	------	16	1.1	28	6.4	16	2.6	----	------	---	-----	----	-----	---	-----	---	-----
Uxy Incised	2	.4	33	3.8	1	.5	3	3.4	1	3.4	6	2.7	3	3.9	1	.1	---	-----	1	.2	30	3.8	25	41.0	40	46.0	25	45.5	25	55.5
Jarí Scraped	---	-----	---	-----	---	-----	----	------	----	------	----	------	----	------	-----	-----	---	-----	----	------	----	------	6	9.8	7	8.0	---	-----	---	-----
Unclassified	---	-----	3	.3	5	2.0	2	2.3	----	------	1	.4	----	------	2	.2	2	.4	----	------	1	.1	10	16.4	5	5.7	---	-----	---	-----
Total	518	100.0	873	100.0	216	100.0	86	100.0	29	100.0	221	100.0	77	100.0	1,281	100.0	434	100.0	609	100.0	782	100.0	61	100.0	87	100.0	55	100.0	45	100.0

TABLE 2.—*Frequency of rim and vessel shapes of Anauerapucú Incised in sites of the Mazagão Phase (fig. 16)*

Site	Form 1		Form 2		Form 3		Total
	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites							
A-4	1	20.0	3	60.0	1	20.0	5
A-3	4	40.0	4	40.0	2	20.0	10
Habitation sites							
A-1					1		1
A-5			1				1
A-2: Cut 1 (level 0-15 cm.)			1		3		4
A-2: Surface and broadside	1	6.3	6	37.5	9	56.2	16
A-2: Cut 2 (level 0-15 cm.)	1		1				2
A-2: Cut 2 (level 15-30 cm.)			1				1
A-2: Cut 1 (level 15-30 cm.)			2		1		3
Total	7		19		17		43

TABLE 3.—*Frequency of rim and vessel shapes of Camaipí Plain in sites of the Mazagão Phase (fig. 17)*

Site	Form 1		Form 2		Form 3		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites							
A-4	11	69.0	2	12.5	3	18.5	16
A-3	7	53.7	4	30.9	2	15.4	13
Habitation sites							
A-1					1		1
A-5	2		1				3
A-2: Cut 1 (level 0-15 cm.)	2		1				3
A-2: Surface and broadside	5	35.7	3	21.3	6	43.0	14
A-2: Cut 2 (level 0-15 cm.)	2						2
A-6	10	71.5			4	28.5	14
Total	39		11		16		66

TABLE 4.—*Frequency of rim and vessel shapes of Jarí Scraped in sites of the Mazagão Phase (fig. 18)*

Habitation sites	Form 1		Form 2		Totals
	Count	Percentage	Count	Percentage	
São João	2				2
Bom Destino			2		2
Total	2		2		4

TABLE 5.—*Frequency of rim and vessel shapes of Mazagão Plain in sites of the Mazagão Phase (fig. 19)*

Site	Form 1		Form 2		Form 3		Form 4		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites									
A-4	3	37.5	1	12.5	1	12.5	3	37.5	8
A-3	12	30.0	8	20.0	9	22.5	11	27.5	40
Habitation sites									
A-1	1	20.0	1	20.0	2	40.0	1	20.0	5
A-5	5	45.4	1	9.1	3	27.3	2	18.2	11
A-2: Cut 1 (level 0–15 cm.)	2	------	----	------	----	------	----	------	2
A-2: Surface and broadside	20	57.3	2	5.7	7	20.0	6	17.0	35
A-2: Cut 2 (level 0–15 cm.)	7	78.0	----	------	2	22.0	----	------	9
A-2: Cut 2 (level 15–30 cm.)	2	------	----	------	----	------	1	------	3
A-2: Cut 1 (level 15–30 cm.)	1	------	----	------	2	------	1	------	4
A-2: Cut 1 (level 30–45 cm.)	1	------	----	------	----	------	----	------	1
A-6	6	60.0	----	------	1	10.0	3	30.0	10
São João	5	71.5	----	------	----	------	2	28.5	7
Bom Destino	5	71.6	----	------	1	14.2	1	14.2	7
Alto Alegre	2	------	----	------	----	------	----	------	2
Uxy	4	80.0	----	------	----	------	1	20.0	5
Total	76	------	13	------	28	------	32	------	149

TABLE 6.—*Frequency of rim and vessel shapes of Piçacá Incised in sites of the Mazagão Phase (fig. 20)*

Site	Form 1		Form 2		Form 3		Form 4		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites									
A-4	5	50.0	3	30.0	1	10.0	1	10.0	10
A-3	6	54.5	4	36.4	----	------	1	9.1	11
Habitation sites									
A-1	1	------	----	------	1	------	----	------	2
A-5	3	42.8	4	57.2	----	------	----	------	7
A-2: Cut 1 (level 0–15 cm.)	1	------	----	------	----	------	----	------	1
A-2: Surface and broadside	3	50.0	2	33.3	----	------	1	16.7	6
A-2: Cut 2 (level 0–15 cm.)	1	------	----	------	----	------	----	------	1
A-2: Cut 1 (level 15–30 cm.)	1	------	----	------	----	------	----	------	1
A-6	----	------	----	------	1	------	----	------	1
Total	21	------	13	------	3	------	3	------	40

TABLE 7.—*Frequency of rim and vessel shapes of Uxy Incised in sites of the Mazagão Phase (fig. 21)*

Site	Form 1		Form 2		Form 3		Form 4		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites									
A-3			1						1
Habitation sites									
A-2: Surface and broadside	3		1						4
A-6	4	40.0	4	40.0	2	20.0			10
São João	5	38.4	4	30.8	3	23.1	1	7.7	13
Bom Destino	9	56.3	2	12.5	1	6.2	4	25.0	16
Alto Alegre	1		1		1				3
Uxy	5	55.6	3	33.4	1	11.0			9
Total	27		16		8		5		56

TABLE 8.—*Frequency of rim and vessel shapes of Vilanova Plain in sites of the Mazagão Phase (fig. 22)*

Site	Form 1		Form 2		Form 3		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites							
A-4	6	66.7	1	11.1	2	22.2	9
A-3	5	50.0	4	40.0	1	10.0	10
Habitation sites							
A-1	6	86.0			1	14.0	7
A-5	1				1		2
A-2: Cut 1 (level 0-15 cm.)	1						1
A-2: Surface and broadside	11	78.6	1	7.1	2	14.3	14
A-2: Cut 2 (level 0-15 cm.)	2						2
A-2: Cut 2 (level 15-30 cm.)	3						3
A-2: Cut 1 (level 15-30 cm.)	1						1
A-2: Cut 1 (level 30-45 cm.)	1						1
A-6	10	66.7			5	33.3	15
Total	47		6		12		65

TABLE 9.—*Reduction of the individual rim and vessel shapes of Mazagão Phase pottery types to common vessel shapes (fig. 24)*

Pottery types	Form A (carinated bowl)	Form B (jar; thickened rim)	Form C (tall, cylindrical jar)	Form D (pedestal-basin lid)	Form E (open bowl)	Form F (jar; outcurved rim)	Form G (flat lids)
Anauerapucú Incised	Form 2	----------	----------	Form 1	Form 3	----------	----------
Camaipí Plain	----------	Form 1	Form 2	----------	Form 3	----------	----------
Jarí Scraped	----------	----------	----------	----------	Form 1	Form 2	----------
Mazagão Plain	----------	Form 1	Form 2	----------	Form 4	Form 3	Rare Form 2.
Piçacá Incised	Form 3	----------	----------	Form 2	Form 1	Form 4	----------
Uxy Incised	Form 1 and Form 2.	----------	----------	----------	----------	Form 4	Form 3.
Vilanova Plain	----------	Form 1	Form 2	----------	Form 3	----------	----------

TABLE 10.—*Frequency of common rim and vessel shapes irrespective of pottery types in sites of the Mazagão Phase (fig. 24)*

Site	Form A (carinated bowl)		Form B (jar; thickened rim)		Form C (tall, cylindrical jar)		Form D (pedestal-basin lid)		Form E (open bowl)		Form F (jar; outcurved rim)		Form G (flat lids)		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites															
A-4	2	4.2	20	41.7	4	8.3	6	12.4	14	29.2	2	4.2	----	------	48
A-3	3	3.5	24	28.3	16	18.8	8	9.4	24	28.2	10	11.2	----	------	85
Habitation sites															
A-1	2	12.5	7	43.7	1	6.3	----	------	4	25.0	2	12.5	----	------	16
A-5	----	------	8	33.4	2	8.3	5	20.8	6	25.0	3	12.5	----	------	24
A-2: Cut 1 (level 0-15 cm.)	3	27.5	5	45.5	1	9.0	1	9.0	1	9.0	----	------	----	------	11
A-2: Surface and broadside	13	14.5	36	40.5	6	6.7	8	9.0	18	20.3	8	9.0	----	------	89
A-2: Cut 2 (level (0-15 cm.)	----	------	11	68.8	----	------	1	6.2	2	12.5	2	12.5	----	------	16
A-2: Cut 2 (level 15-30 cm.)	----	------	5	71.4	----	------	1	14.3	1	14.3	----	------	----	------	7
A-2: Cut 1 (level 15-30 cm.)	1	11.2	2	22.2	----	------	2	22.2	2	22.2	2	22.2	----	------	9
A-2: Cut 1 (level 30-45 cm.)	----	------	2	------	----	------	----	------	----	------	----	------	----	------	2
A-6	9	18.0	26	52.0	----	------	----	------	12	24.0	1	2.0	2	4.0	50
São João	9	41.0	5	22.7	----	------	----	------	4	18.2	1	4.5	3	13.6	22
Bom Destino	11	44.0	5	20.0	----	------	----	------	1	4.0	7	28.0	1	4.0	25
Alto Alegre	2	40.0	2	40.0	----	------	----	------	----	------	----	------	1	20.0	5
Uxy	8	57.0	4	28.6	----	------	----	------	1	7.2	----	------	1	7.2	14
Total	63	------	162	------	30	------	32	------	90	------	38	------	8	------	423

TABLE 11.—*Frequency of pottery types in sites of the Aristé Phase (fig. 46)*

Pottery types	Site A-7—Amapá City		Site A-8—Aurora (Aristé Occupation)		Site A-9—Relógio		Site A-10—Montanha da Pluma (outside cave)		Site A-10—Montanha da Pluma (inside cave)		Site A-11—Montanha de Aristé (cave 1)		Site A-11—Montanha de Aristé (cave 2)		Site A-11—Montanha de Aristé (cave 3)		Site A-12—Cruzeiro	
	Number of sherds	Percentage	Number of sherds	Percentage	Number of sherds	Percentage	Number of vessels[1]	Percentage	Number of vessels[1]	Percentage	Number of vessels[1]	Percentage	Number of vessels[1]	Percentage	Number of vessels[1]	Percentage	Number of sherds	Percentage
Aristé Plain	1	0.3	10	83.5	49	11.2	5	20.8	30	49.2	23	74.4	16	28.6	4	57.2	176	33.1
Aristé Painted							5	20.8	9	14.8	4	12.8	21	37.5	3	42.8		
Serra Plain	406	96.4	2	16.5	387	88.2	11	46.0	16	26.2	3	9.6	6	10.7			339	64.0
Serra Painted	14	3.3					3	12.4	3	4.9			3	5.4				
Flexal Scraped									2	3.3	1	3.2	9	16.1			2	.4
Daví Incised					3	.6							1	1.7			11	2.3
Uaçá Incised																		
Unclassified									1	1.6							1	.2
Totals	421	100.0	12	100.0	439	100.0	24	100.0	61	100.0	31	100.0	56	100.0	7	100.0	529	100.0

Pottery types	Site A-13—Matapí		Site A-14—Macapá		Site A-15—Vila Velha		Site A-16—Ilhas do Campo		Site A-18—Maica		Site A-19—Renovado (Goeldi's Cunany)		Site A-20—Vila Cunaní		Site A-21—Pracuúba		Site A-22—Conceição	
	Number of sherds	Percentage	Number of vessels[1]	Percentage	Number of vessels[1]	Percentage	Number of sherds	Percentage	Number of sherds	Percentage	Number of vessels[1]	Percentage	Number of sherds	Percentage	Number of sherds	Percent age	Number of sherds	Percentage
Aristé Plain	80	98.7					29	27.9	72	32.4					27	11.1	9	9.7
Aristé Painted							1	.9										
Serra Plain			8	72.5			56	54.0	124	56.0	4	17.4	15	93.8	208	86.5	79	87.0
Serra Painted			3	27.5	2	100.0	2	1.9			19	82.6	1	6.2	5	2.0	3	3.3
Flexal Scraped							1	.9										
Daví Incised	1	1.3					1	.9	2	.8					1	.4		
Uaçá Incised							13	12.6	22	10.0								
Unclassified							1	.9	2	.8								
Totals	81	100.0	11	100.0	2	100.0	104	100.0	222	100.0	23	100.0	16	100.0	241	100.0	91	100.0

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[1] Since many of the vessels were complete and the others could be reconstructed the vessel count was used for these cemeteries rather than the sherd total.

TABLE 12.—*Frequency of rim and vessel shapes of Aristé Plain in sites of the Aristé Phase (fig. 38)*

Site	Form 1		Form 2		Form 3		Form 4		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites									
A-10 (outside)	1		2						3
A-10 (inside)	8	44.5	3	16.6	3	16.6	4	22.3	18
A-11: Cave 2	3	33.3	3	33.3	2	22.3	1	11.1	9
A-11: Cave 3	1				2				3
A-11: Cave 1	4	66.6	2	33.4					6
Habitation sites									
A-9					1				1
A-21	1								1
A-12	1	20.0	2	40.0	2	40.0			5
A-18	1	11.1	5	55.5	3	33.4			9
A-16	1				1				2
Total	21		17		14		5		57

TABLE 13.—*Frequency of rim and vessel shapes of Aristé Painted in sites of the Aristé Phase (fig. 39)*

Site	Form 1		Form 2		Form 3		Form 4		Form 5		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites											
A-10 (outside)	1		2						1		4
A-10 (inside)	3	37.5	1	12.5	1	12.5	1	12.5	2	25.0	8
A-11: Cave 2	3	23.0	2	15.5	1	7.7	3	23.0	4	30.8	13
A-11: Cave 3	1						1				2
A-11: Cave 1	1	16.7	2	33.3	1	16.7			2	33.3	6
Habitation sites											
A-21							1				1
A-13									1		1
Total	9		7		3		6		10		35

TABLE 14.—*Frequency of rim and vessel shapes of Daví Incised in sites of the Aristé Phase (fig. 41)*

Site	Form 1		Form 2		Form 3		Form 4		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites									
A-11: Cave 2	1								1
Habitation sites									
A-9							1		1
A-21					1				1
A-18	1		2				1		4
A-13			1						1
Total	2		3		1		2		8

TABLE 15.—*Frequency of rim and vessel shapes of Flexal Scraped in sites of the Aristé Phase (fig. 42)*

Site	Form 1		Form 2		Form 3		Form 4		Form 5		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites											
A-11: Cave 2	2	33.3	2	33.3	1	16.7	1	16.7	------	------	6
A-11: Cave 1	1	------	------	------	------	------	------	------	------	------	1
Habitation site											
A-12	------	------	------	------	------	------	------	------	1	------	1
Total	3	------	2	------	1	------	1	------	1	------	8

TABLE 16.—*Frequency of rim and vessel shapes of Serra Plain in sites of the Aristé Phase (fig. 43)*

Site	Form 1		Form 2		Form 3		Form 4		Form 5		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites											
A-19	2	------	------	------	------	------	2	------	------	------	4
A-14	1	------	------	------	------	------	1	------	------	------	2
A-10 (outside)	3	43.0	1	14.3	------	------	2	28.4	1	14.3	7
A-10 (inside)	------	------	3	33.4	2	22.2	2	22.2	2	22.2	9
Habitation sites											
A-20	2	------	------	------	2	------	------	------	------	------	4
A-7	2	------	------	------	1	------	1	------	------	------	4
A-9	4	28.6	1	7.2	6	42.8	3	21.4	------	------	14
A-22	1	------	------	------	------	------	1	------	1	------	3
A-21	2	------	------	------	------	------	------	------	2	------	4
A-12	2	13.3	3	20.0	6	40.0	4	26.7	------	------	15
A-18	8	47.0	1	5.8	5	29.5	2	11.8	1	5.9	17
A-16	------	------	------	------	2	------	2	------	------	------	4
Total	27	------	9	------	24	------	20	------	7	------	87

TABLE 17.—*Frequency of rim and vessel shapes of Serra Painted in sites of the Aristé Phase (fig. 44)*

Site	Form 1		Form 2		Form 3		Form 4		Form 5		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites											
A-15	------	------	1	------	------	------	------	------	------	------	1
A-19	1	5.0	14	74.0	4	21.0	------	------	------	------	19
A-14	2	------	------	------	------	------	1	------	------	------	3
A-10 (outside)	------	------	------	------	------	------	2	------	1	------	3
A-10 (inside)	1	------	------	------	1	------	------	------	1	------	3
A-11: Cave 2	2	------	1	------	------	------	------	------	------	------	3
Habitation sites											
A-20	------	------	------	------	1	------	------	------	------	------	1
A-7	2	40.0	------	------	2	40.0	------	------	1	10.0	5
A-22	------	------	------	------	------	------	1	------	------	------	1
A-21	------	------	------	------	2	------	1	------	------	------	3
A-16	------	------	------	------	2	------	------	------	------	------	2
Total	8	------	16	------	12	------	5	------	3	------	44

TABLE 18.—*Frequency of rim and vessel shapes of Uaçá Incised in sites of the Aristé Phase (fig. 45)*

Habitation sites	Form 1		Form 2		Form 3		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	
A-18	2	------------	1	------------	--------	------------	3
A-16	3	42.8	3	42.8	1	12.4	7
Total	5	------------	4	------------	1	------------	10

TABLE 19.—*Reduction of the individual rim and vessel shapes of Aristé Phase pottery types to common vessel shapes*

Pottery types	Form A (collared, cambered jar)	Form A-B (combination of forms A and B)	Form B (jar with neck; thickened rim)	Form C (open bowl)	Form D (slightly carinated bowl with everted lip)	Form E (bowl with constricted mouth)	Form F (carinated bowl with flangelike rim)	Form G (small round jar, everted lip)	Form H (large jar, direct rim, long neck)
Aristé Plain	Form 1		Form 2	Form 3		Form 4			
Aristé Painted	Form 1		Form 2		Form 3	Form 4	Form 5		
Daví Incised	Form 1		Form 2		Form 4		Form 3		
Flexal Scraped	Form 1				Form 5	Form 3	Form 4	Form 2	
Serra Plain			Form 1	Form 4	Form 3	Form 5			Form 2.
Serra Painted		Form 2	Form 1	Form 4	Form 3	Form 5			
Uaçá Incised	Form 3				Form 2	Form 1			

TABLE 20.—*Frequency of common rim and vessel shapes irrespective of pottery type in sites of the Aristé Phase*

Site	Form A (collared, cambered jar)		Form A-B (combination of forms A and B		Form B (jar with neck; thickened rim)		Form C (open bowl)		Form D (slightly carinated bowl with everted lip)		Form E (bowl with constricted mouth)		Form F (carinated bowl with flangelike rim)		Form G (small round jar, everted lip)		Form H (large jar, direct rim, long neck)		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Cemetery sites																			
A-15	------	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1
A-19	------	------	14	73.4	3	------	2	------	4	17.3	------	------	------	------	------	------	------	------	23
A-14	------	------	------	------	3	------	2	------	------	------	------	------	------	------	------	------	------	------	5
A-10 (outside)	2	11.7	------	------	7	41.3	4	23.5	------	------	2	11.7	1	5.9	------	------	1	5.9	17
A-10 (inside)	11	29.0	------	------	5	13.2	5	13.2	4	10.5	8	21.1	2	5.2	------	------	3	7.8	38
A-11: Cave 2	9	28.2	1	3.1	7	21.8	2	6.3	1	3.1	5	15.6	5	15.6	2	6.3	------	------	32
A-11: Cave 3	2	40.0	------	------	------	------	2	40.0	------	------	1	20.0	------	------	------	------	------	------	5
A-11: Cave 1	6	46.1	------	------	4	30.8	------	------	1	7.8	------	------	2	15.3	------	------	------	------	13
Habitation sites																			
A-20	------	------	------	------	2	------	------	------	3	------	------	------	------	------	------	------	------	------	5
A-7	------	------	------	------	4	44.5	1	11.2	3	33.4	1	11.2	------	------	------	------	------	------	9
A-9	------	------	------	------	4	25.0	4	25.0	7	43.8	------	------	------	------	------	------	1	------	16
A-22	------	------	------	------	1	------	2	------	------	------	1	------	------	------	------	------	------	------	4
A-21	1	10.0	------	------	2	20.0	1	10.0	2	20.0	3	3.0	1	10.0	------	------	------	------	10
A-12	1	4.7	------	------	4	19.1	6	28.6	7	33.3	------	------	------	------	------	------	3	14.3	21
A-18	2	6.1	------	------	15	45.4	5	15.2	7	21.2	3	9.1	------	------	------	------	1	3.0	33
A-16	2	13.4	------	------	------	------	3	20.0	7	46.6	3	20.0	------	------	------	------	------	------	15
A-13	------	------	------	------	1	------	------	------	------	------	------	------	1	------	------	------	------	------	2
Total	36	------	16	------	62	------	39	------	46	------	27	------	12	------	2	------	9	------	249

TABLE 21.—*Frequency of pottery types in stratigraphic excavations at site J-7 of the Ananatuba Phase (fig. 56)*

Pottery types	J-7: Sipó—strata cut 1								J-7: Sipó—strata cut 2											
	Level 0-15 cm.		Level 15-30 cm.		Level 30-45 cm.		Level 45-60 cm.		Level 0-15 cm.		Level 15-30 cm.		Level 30-45 cm.		Level 45-60 cm.		Level 60-75 cm.		Level 75-90 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Ananatuba Phase:																				
Ananatuba Plain	40	3.3	240	23.6	438	72.0	117	81.4	43	7.1	77	11.7	272	27.6	2,039	78.2	1,349	78.0	166	73.6
Sororoco Plain	4	.3	112	11.1	114	18.7	24	16.7	2	.3	14	2.1	47	4.7	353	13.6	232	13.4	43	19.0
Ananatuba Painted	3	.3	6	.6	5	.8	1	.6	2	.3	3	.4	1	.1	8	.3	2	.1	------	------
Carmo Brushed	------	------	46	4.5	39	6.4	2	1.3	6	.9	27	4.2	24	2.4	121	4.7	120	6.9	11	4.8
Sipó Incised	17	1.4	35	3.4	12	1.9	------	------	14	2.3	24	3.7	31	3.1	81	3.1	27	1.6	6	2.6
Unclassified	3	.3	1	.1	1	.2	------	------	2	.3	2	.3	3	.3	2	.1	------	------	------	------
Mangueiras Phase:																				
Anjos Plain	560	46.7	187	18.4	------	------	------	------	191	31.4	136	21.0	190	19.3	------	------	------	------	------	------
Mangueiras Plain	477	39.8	299	29.4	------	------	------	------	309	51.0	316	48.8	379	38.5	------	------	------	------	------	------
Bacurí Brushed	68	5.7	55	5.4	------	------	------	------	15	2.5	3	.4	3	.3	------	------	------	------	------	------
Esperança Red	26	2.2	35	3.5	------	------	------	------	24	3.9	47	7.4	36	3.7	------	------	------	------	------	------
Totals	1,198	100.0	1,016	100.0	609	100.0	144	100.0	608	100.0	649	100.0	986	100.0	2,604	100.0	1,730	100.0	226	100.0
Ananatuba Phase sherds	67	5.5	440	43.4	609	100.0	144	100.0	69	11.4	147	22.6	378	38.5	2,604	100.0	1,730	100.0	226	100.0
Mangueiras Phase sherds	1,131	94.5	576	56.6	------	------	------	------	539	88.6	502	77.4	608	61.5	------	------	------	------	------	------

TABLE 22.—*Frequency of pottery types in stratigraphic excavations at Sites J–8, J–9, and J–10 of the Ananatuba Phase (fig. 56)*

Pottery types	J-8: Maguarí: Surface and Test		J-9: Ananatuba—strata cut 1										J-10: Sororoco—strata cut 1											
			Surface		Level 0–15 cm.		Level 15–30 cm.		Level 30–45 cm.		Level 45–60 cm.		Level 0–30 cm.		Level 30–45 cm.		Level 45–60 cm.		Level 60–75 cm.		Level 75–90 cm.		Level 90–105 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain Wares:																								
Ananatuba Plain	85	67.0	91	85.8	1,230	84.1	1,177	83.2	1,214	89.5	327	93.0	20	29.4	258	48.7	259	52.0	514	63.8	308	68.5	157	63.7
Sororoco Plain	35	27.6	14	13.3	203	13.8	209	14.7	121	8.9	22	6.2	47	69.1	261	49.3	216	43.4	257	31.9	124	27.6	71	28.7
Decorated Wares:																								
Ananatuba Painted	----	----	----	----	2	.1	2	.1	----	----	----	----	----	----	----	----	----	----	1	.1	----	----	----	----
Carmo Brushed	----	----	----	----	14	.9	19	1.2	9	.6	2	.5	----	----	4	.7	11	2.2	15	1.9	10	2.2	9	3.6
Sipó Incised	3	2.3	1	.9	5	.3	8	.5	12	.8	1	.3	1	1.5	5	1.0	8	1.6	17	2.0	3	.6	8	3.2
Unclassified	4	3.1	----	----	11	.8	4	.3	4	.2	----	----	----	----	2	.3	4	.8	3	.3	5	1.1	2	.8
Totals	127	100.0	106	100.0	1,465	100.0	1,419	100.0	1,360	100.0	352	100.0	68	100.0	530	100.0	498	100.0	807	100.0	450	100.0	247	100.0

TABLE 23.—*Frequency of rim and vessel shapes of Ananatuba Plain in sites of the Ananatuba Phase (fig. 53)*

Site	Form 1		Form 2		Form 3		Form 4		Form 5		Form 6		Form 7		Form 8		Form 9		Totals per level	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
J-7: Cut 1—																				
Level 0-15 cm	1	------	------	------	------	------	------	------	------	------	------	------	------	------	10	------	------	------	11	------
Level 15-30 cm	6	17.5	2	5.9	------	------	1	2.9	------	------	3	8.8	------	------	21	62.0	1	2.9	34	100.0
Level 30-45 cm	6	12.0	7	14.0	------	------	3	6.0	------	------	------	------	------	------	33	66.0	1	2.0	50	100.0
Level 45-60 cm	1	------	------	------	------	------	------	------	------	------	------	------	------	------	9	------	------	------	10	------
J-7: Cut 2—																				
Level 0-15 cm	2	------	------	------	------	------	1	------	------	------	------	------	------	------	8	------	1	------	12	------
Level 15-30 cm	3	15.0	2	10.0	1	5.0	3	15.0	------	------	------	------	------	------	9	45.0	2	10.0	20	100.0
Level 30-45 cm	9	18.3	3	6.1	3	6.1	1	2.0	2	4.1	5	10.2	------	------	22	45.0	4	8.2	49	100.0
Level 45-60 cm	41	18.2	21	9.3	5	2.2	21	9.3	15	6.7	12	5.4	------	------	106	47.1	4	1.8	225	100.0
Level 60-75 cm	19	12.5	15	9.9	4	2.7	6	4.0	------	------	16	10.6	------	------	89	59.0	2	1.3	151	100.0
Level 75-90 cm	4	16.6	3	12.5	1	4.2	------	------	1	4.2	3	12.5	------	------	12	50.0	------	------	24	100.0
Totals at Site J-7	92	15.7	53	9.0	14	2.4	36	6.1	18	3.0	39	6.7	------	------	319	54.5	15	2.6	586	100.0
J-10: Cut 1—																				
Level 0-30 cm	------	------	------	------	1	------	------	------	------	------	------	------	------	------	2	------	------	------	3	------
Level 30-45 cm	6	26.1	2	8.7	3	13.0	3	13.0	------	------	2	8.7	------	------	7	30.5	------	------	23	100.0
Level 45-60 cm	3	9.4	1	3.1	2	6.2	5	15.6	------	------	4	12.5	------	------	16	50.1	1	3.1	32	100.0
Level 60-75 cm	15	31.3	1	2.1	3	6.2	7	14.6	------	------	9	18.7	------	------	11	22.9	2	4.2	48	100.0
Level 75-90 cm	4	12.1	3	9.1	2	6.0	3	9.1	------	------	5	15.1	------	------	16	48.6	------	------	33	100.0
Level 90-105 cm	8	30.8	3	11.6	2	7.7	1	3.8	------	------	1	3.8	------	------	11	42.3	------	------	26	100.0
Totals at Site J-10	36	21.8	10	6.1	13	7.9	19	11.5	------	------	21	12.7	------	------	63	38.2	3	1.8	165	100.0
J-8: Surface and test	------	------	------	------	------	------	------	------	------	------	------	------	------	------	4	------	1	------	5	------
J-9: Cut 1—																				
Level 0-15 cm	36	30.4	6	5.1	2	1.7	16	13.6	2	1.7	10	8.5	4	3.4	28	23.7	14	11.9	118	100.0
Level 15-30 cm	39	28.0	14	10.0	3	2.2	20	14.4	3	2.2	13	9.4	6	4.3	25	18.0	16	11.5	139	100.0
Level 30-45 cm	33	26.6	15	12.2	8	6.5	21	16.9	1	.8	4	3.2	3	2.4	37	29.8	2	1.6	124	100.0
Level 45-60 cm	11	31.4	4	11.4	3	8.6	2	5.7	------	------	------	------	------	------	14	40.1	1	2.8	35	100.0
Totals at Site J-9	119	28.6	39	9.4	16	3.8	59	14.2	6	1.4	27	6.5	13	3.1	104	25.1	33	7.9	416	100.0
Grand totals	247	21.1	102	8.8	43	3.7	114	9.7	24	2.1	87	7.4	13	1.1	490	41.7	52	4.4	1,172	100.0

TABLE 24.—*Frequency of rim and vessel shapes of Ananatuba Painted and Carmo Brushed in sites of the Ananatuba Phase (figs. 52 and 54)*

Site	Vessel forms of Carmo Brushed (fig. 54)								Vessel forms of Ananatuba Painted (fig. 52)					
	Form 1		Form 2		Form 3		Totals per level		Form 1		Form 2		Totals per level	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
J-7: Cut 1—														
Level 0—15 cm									1				1	
Level 15—30 cm	1				3		4							
Level 30—45 cm					2		2							
Level 45—60 cm														
J-7: Cut 2—														
Level 0-15 cm									1		1		2	
Level 15-30 cm	2						2		1		1		2	
Level 30-45 cm	1						1				1		1	
Level 45-60 cm	2	33.4	1	16.6	3	50.0	6	100.0	1		1		2	
Level 60-75 cm			2	18.0	9	82.0	11	100.0			1		1	
Level 75-90 cm					1		1							
Totals at Site J-7	6	22.2	3	11.1	18	66.7	27	100.0	4		5		9	
J-10: Cut 1—														
Level 0-30 cm														
Level 30-45 cm														
Level 45-60 cm														
Level 60-75 cm			3		2		5				1		1	
Level 75-90 cm			1				1							
Level 90-105 cm	1		2				3							
Totals at Site J-10	1	11.1	6	66.7	2	22.2	9	100.0			1		1	
J-8: Surface and test														
J-9: Cut 1—														
Level 0-15 cm	1		1				2				1		1	
Level 15-30 cm	2		2		1		5		1				1	
Level 30-45 cm														
Level 45-60 cm														
Totals at Site J-9	3	42.8	3	42.8	1	14.4	7	100.0	1		1		2	
Grand totals	10		12		21		43		5		7		12	

TABLE 25.—*Frequency of rim and vessel shapes of Sipó Incised in sites of the Ananatuba Phase (fig. 55)*

Sites	Form 1		Form 2		Form 3		Form 4		Totals per level
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
J-7: Cut 1—									
Level 0-15 cm	2				1				3
Level 15-30 cm	6	60.0			4	40.0			10
Level 30-45 cm	6	85.7			1	14.3			7
Level 45-60 cm									
J-7: Cut 2—									
Level 0-15 cm	1				1				2
Level 15-30 am	7	70.0			1	10.0	2	20.0	10
Level 30-45 cm	8	61.5	1	7.7	3	23.1	1	7.7	13
Level 45-60 cm	29	80.5	4	11.1			3	8.4	36
Level 60-75 cm	6	65.7	1	11.1	2	22.2			9
Level 75-90 cm			1						1
Totals at Site J-7	65	71.5	7	7.7	13	14.2	6	6.6	91
J-10: Cut 1—									
Level 0-30 cm									
Level 30-45 cm	1				1				2
Level 45-60 cm	1		1		4				6
Level 60-75 cm	3		3		3				9
Level 75-90 cm			1						1
Level 90-105 cm	6		1				1		8
Totals at Site J-10	11	42.4	6	23.0	8	30.8	1	3.8	26
J-8: Surface and test							1		1
J-9: Cut 1—									
Level 0-15 cm									
Level 15-30 cm	1		2						3
Level 30-45 cm	4		1		1		1		7
Level 45-60 cm							1		1
Totals at Site J-9	5	45.5	3	27.3	1	9.0	2	18.2	11
Grand totals	81		16		22		10		129

TABLE 26.—*Frequency of rim and vessel shapes of Sororoco Plain in sites of the Ananatuba Phase (fig. 53)*

Site	Form 1		Form 2		Form 3		Form 4		Form 5		Form 6		Form 7		Form 8		Form 9		Totals per level	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
J-7: Cut 1—																				
Level 0–15 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 15–30 cm	1	8.3	2	16.7	-----	-----	2	16.7	4	33.3	2	16.7	-----	-----	1	8.3	-----	-----	12	100.0
Level 30–45 cm	1	9.1	1	9.1	-----	-----	1	9.1	6	54.5	1	9.1	-----	-----	1	9.1	-----	-----	11	100.0
Level 45–60 cm	-----	-----	2	33.3	-----	-----	-----	-----	3	50.0	1	16.7	-----	-----	-----	-----	-----	-----	6	100.0
J-7: Cut 2—																				
Level 0–15 cm	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----
Level 15–30 cm	1	25.0	-----	-----	1	25.0	-----	-----	2	50.0	-----	-----	-----	-----	-----	-----	-----	-----	4	100.0
Level 30–45 cm	-----	-----	3	23.1	1	7.7	1	7.7	5	38.4	2	15.4	-----	-----	1	7.7	-----	-----	13	100.0
Level 45–60 cm	1	2.1	17	35.4	-----	-----	8	16.7	13	27.1	4	8.3	-----	-----	4	8.3	1	2.1	48	100.0
Level 60–75 cm	1	3.1	11	34.4	2	6.3	-----	-----	13	40.6	-----	-----	-----	-----	5	15.6	-----	-----	32	100.0
Level 75–90 cm	1	-----	2	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	2	-----	-----	-----	6	100.0
Totals at Site J-7	6	4.5	38	28.7	4	3.0	13	9.7	46	34.6	11	8.3	-----	-----	14	10.5	1	.7	133	100.0
J-10: Cut 1—																				
Level 0–30 cm	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	1	-----	-----	-----	-----	-----	-----	-----	2	-----
Level 30–45 cm	2	25.0	-----	-----	-----	-----	1	12.5	-----	-----	4	50.0	-----	-----	1	12.5	-----	-----	8	100.0
Level 45–60 cm	6	42.8	-----	-----	-----	-----	1	7.2	-----	-----	5	35.6	-----	-----	2	14.4	-----	-----	14	100.0
Level 60–75 cm	2	16.6	-----	-----	1	8.3	2	16.6	-----	-----	3	25.0	-----	-----	4	33.3	-----	-----	12	100.0
Level 75–90 cm	4	40.0	1	10.0	2	20.0	1	10.0	-----	-----	-----	-----	-----	-----	2	20.0	-----	-----	10	100.0
Level 90–105 cm	5	35.7	3	21.4	1	7.2	-----	-----	-----	-----	-----	-----	-----	-----	5	35.7	-----	-----	14	100.0
Totals at Site J-10	19	31.7	4	6.6	4	6.7	5	8.3	1	1.6	13	21.7	-----	-----	14	23.4	-----	-----	60	100.0
J-8: Surface and test	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----
J-9: Cut 1—																				
Level 0–15 cm	11	40.7	2	7.4	1	3.7	3	11.1	2	7.4	4	14.9	2	7.4	1	3.7	1	3.7	27	100.0
Level 15–30 cm	12	32.5	5	13.5	2	5.4	5	13.5	1	2.7	5	13.5	1	2.7	6	16.2	-----	-----	37	100.0
Level 30–45 cm	6	42.7	3	21.4	-----	-----	-----	-----	-----	-----	1	7.1	1	7.1	2	14.2	1	7.5	14	100.0
Level 45–60 cm	5	45.4	-----	-----	2	18.2	-----	-----	-----	-----	-----	-----	-----	-----	3	27.3	1	9.1	11	100.0
Totals at Site J-9	34	38.3	10	11.2	5	5.6	8	9.0	3	3.3	10	11.2	4	4.5	12	13.6	3	3.3	89	100.0
Grand totals	59	20.8	52	18.3	14	4.9	26	9.2	50	17.8	34	12.0	4	1.4	40	14.1	4	1.4	283	-----

TABLE 27.—*Frequency of 3 jar shapes in the Ananatuba Phase plain wares which influenced the pottery of the Mangueiras Phase (figs. 73 and 74)*

Sites	Common jar shape						Total rims of both Ananatuba Plain and Sororoco Plain
	Form 1 of Ananatuba Plain and form 1 of Sororoco Plain		Form 3 of Ananatuba Plain and form 3 of Sororoco Plain		Form 5 of Ananatuba Plain and form 5 of Sororoco Plain		
	Count	Percentage	Count	Percentage	Count	Percentage	
J-7: Cut 1—							
Level 0–15 cm	1						11
Level 15–30 cm	7	15.2			4	8.7	46
Level 30–45 cm	7	11.5			6	9.8	61
Level 45–60 cm	1	6.3			3	18.7	16
J-7: Cut 2—							
Level 0–15 cm	2						13
Level 15–30 cm	4	16.7	2	8.4	2	8.4	24
Level 30–45 cm	9	14.5	4	6.5	7	11.3	62
Level 45—60 cm	42	15.4	5	1.8	28	10.3	273
Level 60–75 cm	20	10.9	6	3.3	13	7.1	183
Level 75–90 cm	5	16.6	1	3.3	1	3.3	30
Totals at Site J-7	98	13.6	18	2.5	64	8.9	719
J-10: Cut 1-							
Level 0–30 cm			1		1		5
Level 30–45 cm	8	25.8	3	9.7			31
Level 45–60cm	9	19.6	2	4.4			46
Level 60–75 cm	17	28.4	4	6.7			60
Level 75–90 cm	8	18.6	4	9.3			43
Level 90–105 cm	13	32.6	3	7.5			40
Totals at Site J-10	55	24.4	17	7.5	1	0.4	225
J-8: Surface and test			1				6
J-9: Cut 1—							
Level 0–15 cm	47	32.4	3	2.1	4	2.7	145
Level 15–30 cm	51	29.0	5	2.8	4	2.3	176
Level 30–45 cm	39	28.2	8	5.8	2	1.5	138
Level 45–60 cm	16	34.8	5	10.8			46
Totals at Site J-9	153		21		10		505
Grand totals	306		57		75		1,455

TABLE 28.—*Frequency of pottery types in surface collections and stratigraphic excavations at sites of the Mangueiras Phase (fig. 72)*

Pottery types	J-5: Croarí—cut 1														J-7: Sipó—cut 1 (Mangueiras Phase occupation of Sipó)				J-7—cut 2 (Mangueiras Phase occupation of Sipó)					
	Surface collection		Level 0–15 cm.		Level 15–30 cm.		Level 30–45 cm.		Level 45–60 cm.		Level 60–75 cm.		Level 75–90 cm.		Level 0–15 cm.		Level 15–30 cm.		Level 0–15 cm.		Level 15–30 cm.		Level 30–45 cm	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Anjos Plain															560	49.4	187	32.5	191	35.5	136	27.0	190	31.3
Mangueiras Plain	428	88.5	249	63.4	196	73.5	157	84.0	173	87.0	231	91.5	73	91.3	477	42.1	299	52.0	309	57.4	316	63.0	379	62.5
Bacurí Brushed															68	6.1	55	9.5	15	2.6	3	.6	3	.4
Croarí Brushed	7	1.4	15	3.8	13	4.9	11	5.9	8	4.0	5	1.9												
Esperança Red	20	4.1	96	24.4	38	14.1	10	5.3	6	3.0	9	3.5	1	1.2	26	2.4	35	6.0	24	4.5	47	9.4	36	5.8
Pocoató Scraped	16	3.2	33	8.4	20	7.5	9	4.8	12	6.0	5	1.9	5	6.3										
Pseudo-Sipó Incised																								
Unclassified	14	2.8									3	1.2	1	1.2										
Totals	485	100	393	100	267	100	187	100	199	100	253	100	80	100	1, 131	100	576	100	539	100	502	100	608	100

TABLE 28.—*Frequency of pottery types in surface collections and stratigraphic excavations at sites of the Mangueiras Phase (fig. 72)—Continued*

Pottery types	J-13: Bacurí—cut 1												J-16: Canivete						J-17: Flor do Anajás					
	Surface collection		Level 0–15 cm.		Level 15–30 cm.		Level 30–45 cm.		Level 45–60 cm.		Level 60–75 cm.		Mound 1—surface		Mound 2—surface		Combined collections		Surface collection		Level 0–15 cm.		Level 15–30 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Anjos Plain	147	38.0	135	71.2	743	68.1	371	47.7	229	34.6	65	21.1	268	44.7	54	43.8	322	44.6	5	3.5	49	21.4	8	20.5
Mangueiras Plain	172	44.5	50	26.3	259	23.7	240	30.9	265	40.0	149	48.2	228	38.1	53	43.2	281	39.0	110	78.5	133	58.1	26	66.8
Bacurí Brushed	54	13.9	2	1.0	70	6.5	148	19.1	161	24.2	82	26.5	72	12.0	12	9.8	84	11.6	----	----	----	----	----	----
Croarí Brushed	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Esperança Red	4	1.0	----	----	----	----	4	.5	2	.2	1	.3	2	.3	----	----	2	.3	2	1.4	3	1.3	----	----
Pocoató Scraped	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	13	9.3	11	4.8	4	10.2
Pseudo-Sipó Incised	5	1.2	1	.5	9	.8	11	1.4	5	.8	10	3.3	19	3.2	3	2.4	22	3.0	4	2.8	----	----	----	----
Unclassified	6	1.4	2	1.0	10	.9	3	.4	2	.2	2	.6	10	1.7	1	.8	11	1.5	6	4.3	33	14.4	1	2.5
Total	388	100	190	100	1,091	100	777	100	664	100	309	100	599	100	123	100	722	100	140	100	229	100	39	100

Pottery types	C-3: Porto Real (surface collection)		C-3: Porto Real—cut 1										C-3: Porto Real—cut 2							
			Level 0–8 cm.		Level 8–16 cm.		Level 16–24 cm.		Level 24–32 cm.		Level 32–40 cm.		Level 0–8 cm.		Level 8–16 cm.		Level 16–24 cm.		Level 24–32 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Anjos Plain	209	13.5	18	10.6	48	17.3	46	13.5	16	10.4	1	3.5	36	23.0	30	12.6	17	9.7	7	4.7
Mangueiras Plain	1,138	73.5	121	71.3	173	62.6	227	66.7	110	72.1	24	85.9	76	49.9	163	69.0	104	59.6	92	62.6
Bacurí Brushed	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Croarí Brushed	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Esperança Red	24	1.5	1	.6	5	1.7	9	2.6	4	2.5	----	----	4	2.6	7	2.8	11	6.2	5	3.5
Pocoató Scraped	156	10.0	26	15.2	42	15.1	46	13.4	23	15.0	3	10.6	35	22.6	27	11.4	40	22.8	42	28.6
Pseudo-Sipó Incised	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Unclassified	24	1.5	4	2.3	9	3.3	13	3.8	----	----	----	----	3	1.9	10	4.2	3	1.7	1	.6
Totals	1,551	100	170	100	277	100	341	100	153	100	28	100	154	100	237	100	175	100	147	100

TABLE 29.—*Frequency of rim and vessel shapes of Anjos Plain in sites of the Mangueiras Phase (fig. 64)*

Sites	Form 1		Form 2		Form 3		Form 4		Form 5		Form 6		Total	Percentage
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage		
J-16	6				1				6		2		15	
J-7: Cut 1—														
Level 0-15 cm	5	12.8	6	15.4	10	25.6	14	36.0	4	10.2			39	100.0
Level 15-30 cm	5	23.8	2	9.5	5	23.8	5	23.8	4	19.1			21	100.0
J-7: Cut 2—														
Level 0-15 cm	5	45.5	2	18.2	3	27.2	1	9.1					11	100.0
Level 15-30 cm	3	27.2	3	27.2	4	36.5	1	9.1					11	100.0
Level 30-45 cm	1				2								3	
J-13: Cut 1—														
Level 0-15 cm	1				1		2						4	
Level 15-30 cm	12	41.4	2	6.9	4	13.7	11	38.0					29	100.0
Level 30-45 cm	8	40.0	2	10.0	3	15.0	6	30.0	1	5.0			20	100.0
Level 45-60 cm	4	30.8			1	7.7	8	61.5					13	100.0
Level 60-75 cm					2		6		2				10	
C-3: Cut 1—														
Level 0-8 cm														
Level 8-16 cm							5		1				6	
Level 16-24 cm	1						3						4	
Level 24-32 cm							2						2	
Level 32-40 cm														
C-3: Cut 2—														
Level 0-8 cm					1		1						2	
Level 8-16 cm					1		1		1		2		5	
Level 16-24 cm	1						1						2	
Level 24-32 cm														
J-17							1				5		6	
J-5: Cut 1—														
Level 0-15 cm														
Level 15-30 cm														
Level 30-45 cm														
Level 45-60 cm														
Level 60-75 cm														
Level 75-90 cm														
Total	52		17		38		68		19		9		203	

TABLE 30.—*Frequency of rim and vessel shapes of Bacurí Brushed and Croarí Brushed in sites of the Mangueiras Phase (figs. 65 and 66)*

Sites	Rim and vessel forms of Bacurí Brushed (fig. 65)									Rim and vessel forms of Croarí Brushed (fig.66)				
	Form 1		Form 2		Form 3		Form 4		Totals	Form 1		Form 2		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage		Count	Percentage	Count	Percentage	
J-16	2						7		9					
J-7: Cut 1—														
Level 0–15 cm	1				2		1		4					
Level 15–30 cm					1				1					
J-7: Cut 2—														
Level 0–15 cm					2				2					
Level 15–30 cm														
Level 30–45 cm			1						1					
J-13: Cut 1—														
Level 0–15 cm														
Level 15–30 cm					1				1					
Level 30–45 cm	1		3		3				7					
Level 45–60 cm	1		5		1				7					
Level 60–75 cm			5		4				9					
C-3: Cut 1—														
Level 0–8 cm														
Level 8–16 cm														
Level 16–24 cm														
Level 24–32 cm														
Level 32–40 cm														
C-3: Cut 2—														
Level 0–8 cm														
Level 8–16 cm														
Level 16–24 cm														
Level 24–32 cm														
J-17														
J-5: Cut 1—														
Level 0–15 cm										1				1
Level 15–30 cm										1		1		2
Level 30–45 cm										1				1
Level 45–60 cm														
Level 60–75 cm														
Level 75–90 cm														
Total	5		14		14		8		41	3		1		4

TABLE 31.—*Frequency of rim and vessel shapes of Mangueiras Plain in sites of the Mangueiras Phase (figs. 68 and 69)*

Sites	Form 1		Form 2		Form 3		Form 4		Form 5		Form 6		Form 7		Form 8		Totals	Percentage
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage		
J–16			2	12.5					1	6.2	9	56.3	2	12.5	2	12.5	16	100.0
J–7: Cut 1—																		
Level 0–15 cm	1	2.9	3	8.6	4	11.3	3	8.6	1	2.9	21	60.0			2	5.7	35	100.0
Level 15–30 cm			2	5.7	6	17.1	9	25.7			16	45.8			2	5.7	35	100.0
J–7: Cut 2—																		
Level 0–15 cm	1	3.7	4	14.8	3	11.1	1	3.7	3	11.1	15	55.6					27	100.0
Level 15–30 cm					7	31.8	3	13.6	1	4.6	11	50.0					22	100.0
Level 30–45 cm			5	26.2	6	31.6	6	31.6	1	5.3	1	5.3					19.	100.0
J–13: Cut 1—																		
Level 0–15 cm							1				1						2	
Level 15–30 cm			1	4.0	5	20.0	8	32.0	3	12.0	7	28.0			1	4.0	25	100.0
Level 30–45 cm	1	3.0	1	3.0	8	24.3	8	24.3	1	3.0	13	39.4			1	3.0	33	100.0
Level 45–60 cm			4	11.1	15	41.7	6	16.6	2	5.6	9	25.0					36	100.0
Level 60–75 cm					3	23.1	2	15.4			8	61.5					13	100.0
C–3: Cut 1—																		
Level 0–8 cm													2		2		4	
Level 8–16 cm	1								3		1				3		8	
Level 16–24 cm									2		3				2		7	
Level 24–32 cm	1								1		2				1		5	
Level 32–40 cm									2		1				1		4	
C-3: Cut 2—																		
Level 0–8 cm	1		1						2		2				3		9	
Level 8–16 cm	1		1						1		3				1		7	
Level 16–24 cm							1		1								2	
Level 24–32 cm	1										2		1		1		5	
J-17	4	11.1	3	8.3			2	5.6	7	19.4	10	27.8	1	2.8	9	25.0	36	100.0
J-5: Cut 1—																		
Level 0–15 cm	3	7.7	3	7.7					2	5.1	15	38.5	14	35.9	2	5.1	39	100.0
Level 15–30 cm	8	18.2									16	36.4	15	34.1	5	11.3	44	100.0
Level 30–45 cm	3	12.5	3	12.5							7	29.1	11	45.9			24	100.0
Level 45–60 cm	3	13.0	1	4.4			1	4.4			6	26.0	10	43.5	2	8.7	23	100.0
Level 60–75 cm	5	15.1	3	9.1			1	3.0			14	42.5	6	18.2	4	12.1	33	100.0
Level 75–90 cm	3										5						8	
Total	37		37		57		52		34		198		62		44		521	

TABLE 32.—*Frequency of rim and vessel shapes of Esperança Red, Pocoató Scraped, and Pseudo-Sipó Incised in sites of the Mangueiras Phase (figs. 67, 70, and 71)*

Sites	Rim and vessel forms of Esperança Red (fig. 67)										Totals	Rim and vessel forms of Pocoató Scraped (fig. 70)						Totals	Rim and vessel forms of Pseudo-Sipó Incised (fig. 71)						Totals
	Form 1		Form 2		Form 3		Form 4		Form 5			Form 1		Form 2		Form 3			Form 1		Form 2		Form 3		
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage		Count	Percentage	Count	Percentage	Count	Percentage		Count	Percentage	Count	Percentage	Count	Percentage	
J-16	1										1								3						3
J-7: Cut 1—																									
Level 0-15 cm					2		3				5														
Level 15-30 cm	4	22.3	4	22.3	9	50.0	1	5.4			18														
J-7: Cut 2—																									
Level 0-15 cm	2		2		2		1				7														
Level 15-30 cm			4	30.8	1	7.6	4	30.8	4	30.8	13														
Level 30-45 cm	2		2				3		1		8														
J-13: Cut 1—																									
Level 0-15 cm																							1		1
Level 15-30 cm																			1		1				2
Level 30-45 cm																			4		4				8
Level 45-60 cm			2								2								2						2
Level 60-75 cm																			4		3				7
C-3: Cut 1—																									
Level 0-8 cm												1		1		1		3							
Level 8-16 cm	1										1	1		1		2		4							
Level 16-24 cm																4		4							
Level 24-32 cm	1										1	1				1		2							
Level 32-40 cm																1		1							
C-3: Cut 2—																									
Level 0-8 cm												4				1		5							
Level 8-16 cm	1										1	1		1		2		4							
Level 16-24 cm							1				1			1		2		3							
Level 24-32 cm												2				1		3							
J-17			1								1	2				1		3			1		1		2
J-5: Cut 1																									
Level 0-15 cm	17	63.0	8	29.6	1	3.7			1	3.7	27	2						2							
Level 15-30 cm	14										14	1				1		2							
Level 30-45 cm	4										4														
Level 45-60 cm	1		1								2														
Level 60-75 cm	1		5								6														
Level 75-90 cm					1				1		2														
Total	49		29		16		13		7		114	15		4		17		36	14		9		2		25

TABLE 33.—*Frequency of three jar shapes in the Mangueiras Phase Plain Wares showing influence from the Ananatuba Phase (figs. 73 and 74)*

Sites	Common Jar Shape: Form 1 of Anjos Plain and form 4 of Mangueiras Plain		Common Jar Shape: Form 3 of Anjos Plain and form 3 of Mangueiras Plain		Common Jar Shape: Form 2 of Anjos Plain		Total rims of both Anjos Plain and Mangueiras Plain
	Count	Percentage	Count	Percentage	Count	Percentage	
J-16	6	19.3	1	3.2			31
J-7: Cut 1—							
Level 0-15 cm	8	10.8	14	18.9	6	8.1	74
Level 15-30 cm	14	25.0	11	19.7	2	3.6	56
Level 30-45 cm	2						5
J-7: Cut 2—							
Level 0-15 cm	6	15.8	6	15.8	2	5.3	38
Level 15-30 cm	6	18.2	11	33.3	3	9.1	33
Level 30-45 cm	7	31.8	8	36.4			22
Totals at J-7	43	18.8	50	21.9	13	.6	228
J-13: Cut 1—							
Level 0-15 cm	2		1				6
Level 15-30 cm	20	37.1	9	16.6	2	3.7	54
Level 30-45 cm	16	30.2	11	20.8	2	3.8	53
Level 45-60 cm	10	20.4	16	32.7			49
Level 60-75 cm	2	8.7	5	21.7			23
Totals at J-13	50	27.0	42	22.7	4	2.2	185
C-3: Cut 1—							
Level 0-8 cm							4
Level 8-16 cm							14
Level 16-24 cm	1						13
Level 24-32 cm							7
Level 32-40 cm							4
C-3: Cut 2—							
Level 0-8 cm			1				11
Level 8-16 cm			1				12
Level 16-24 cm	2						4
Level 24-32 cm							5
Totals at C-3	3	4.1	2	2.7			74
J-17	2	4.9					41
J-5: Cut 1—							
Level 0-15 cm							39
Level 15-30 cm							45
Level 30-45 cm							24
Level 45-60 cm	1						23
Level 60-75 cm	1						33
Level 75-90 cm							8
Totals at J-5	2	1.2					172
Grand totals	106		95		17		731

TABLE 34.—*Frequency of pottery types in surface collections and stratigraphic excavations at sites of the Formiga phase (fig. 85)*

Pottery types	J-4: Mucajá		J-6: Formiga													
			J-6: Formiga—surface		Md. 1: Cut 1											
					Level 0–15 cm.		Level 15–30 cm.		Level 30–45 cm.		Level 45–60 cm.		Level 60–75 cm.		Level 75–90 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Catarina Plain			3	2.4	116	55.5	72	5.7	8	.7						
Coroca Plain			6	4.0	18	8.6	214	17.3	207	18.8	141	25.4				
Embaúba Plain	666	71.8	119	81.4	63	30.2	659	53.5	564	50.9	97	17.5				
Formiga Plain	101	10.9	16	10.8	4	1.9	236	19.0	292	26.4	289	52.2	144	96.1	110	95.0
Mucajá Corrugated	149	16.0														
Pseudo-Sipó Incised					2	.9	17	1.4	12	1.1	6	1.1				
Saúba Brushed	10	1.0	1	.7	1	.5	16	1.3	14	1.2	9	1.6	2	1.2	3	2.5
Unclassified	3	.3	1	.7	2	.9	14	1.8	11	.9	12	2.2	4	2.7	3	2.5
Marajoara trade																
Ararí Excised					3	1.5										
Anajás Incised																
Totals	929	100	146	100	209	100	1,228	100	1,108	100	554	100	150	100	116	100
Sherds too eroded to classify							154		122		18		22		19	

Pottery types	J-6: Formiga															
	Md. 3: Cut 2								Md. 2: Cut 3							
	Level 0-15 cm.		Level 15–30 cm.		Level 30–45 cm.		Level 45–60 cm.		Level 0–15 cm.		Level 15–30 cm.		Level 30–45 cm.		Level 45–60 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Catarina Plain	23	18.8	39	16.4												
Coroca Plain			21	8.8	136	27.6	14	11.1	10	4.5	133	18.0	142	17.0	29	17.4
Embaúba Plain	81	65.8	143	60.1	212	43.0	44	34.9	162	74.5	317	43.0	207	24.8	64	38.6

Formiga Plain	-	-	5	2.1	120	24.2	67	53.2	43	19.7	285	38.6	464	55.5	71	42.8
Mucajá Corrugated	4	3.2	20	8.4	3	.6	-	-	-	-	-	-	-	-	-	-
Pseudo-Sipó Incised	-	-	-	-	1	.2	-	-	-	-	-	-	8	.9	2	1.2
Saúba Brushed	1	.8	7	2.9	19	3.8	1	.8	1	.4	1	.1	9	1.1	-	-
Unclassified	1	.8	3	1.3	3	.6	-	-	2	.9	3	.3	6	.7	-	-
Marajoara trade																
Arari Excised	7	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anajás Incised	6	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals	123	100	238	100	494	100	126	100	218	100	739	100	836	100	166	100
Sherds too eroded to classify	26	-	98	-	125	-	3	-	13	-	38	-	35	-	38	-

Pottery types	J-18: Coroca											
	J-18: Coroca—surface		Level 0-15 cm.		Level 15-30 cm.		Level 30-45 cm.		Level 45-60 cm.		Level 60-75 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Catarina Plain	-	-	-	-	-	-	-	-	-	-	-	-
Coroca Plain	5	26.2	7	14.9	35	22.4	101	47.3	145	69.5	7	41.2
Embaúba Plain	12	63.4	29	61.8	77	49.4	66	30.8	23	11.0	5	29.4
Formiga Plain	1	5.2	6	12.7	33	21.1	39	18.2	33	15.7	5	29.4
Mucajá Corrugated	-	-	-	-	-	-	-	-	-	-	-	-
Pseudo-Sipó Incised	-	-	-	-	-	-	-	-	-	-	-	-
Saúba Brushed	-	-	-	-	-	-	-	-	-	-	-	-
Unclassified	1	5.2	5	10.6	11	7.1	8	3.7	8	3.8	-	-
Marajora trade												
Arari Excised	-	-	-	-	-	-	-	-	-	-	-	-
Anajás Incised	-	-	-	-	-	-	-	-	-	-	-	-
Totals	19	100	47	100	156	100	214	100	209	100	17	100
Sherds too eroded to classify	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 35.—*Frequency of rim and vessel shapes of Catarina Plain and Coroca Plain in sites of the Formiga Phase (figs. 78 and 79)*

Sites	Rim and vessel form of Coroca Plain (fig. 79)									Rim and vessel form of Catarina Plain (fig. 78)				
	Form 1		Form 2		Form 3		Form 4		Totals	Form 1		Form 2		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage		Count	Percentage	Count	Percentage	
J-4														
J-6: Cut 1—														
Level 0-15 cm							1		1	1				1
Level 15-30 cm	2		5		8		2		17	1				1
Level 30-45 cm			2		3		2		7	1				1
Level 45-60 cm														
Level 60-75 cm														
Level 75-90 cm														
J-6: Cut 2—														
Level 0-15 cm														
Level 15-30 dm							1		1					
Level 30-45 cm	1				3				4					
Level 45-60 cm					1				1					
J-6: Cut 3—														
Level 0—15 cm										1				1
Level 15-30 cm			1				1		2	2		1		3
Level 30-45 cm	1		1		2		1		5					
Level 45-60 cm			1						1					
Totals at J-6	4	10.2	10	25.6	17	43.6	8	20.6	39	6		1		7
J-18—														
Level 0-15 cm														
Level 15-30 cm	2								2					
Level 30-45 cm	13		1				2		16					
Level 45-60 cm	18		1				1		20					
Level 60-75 cm														
Totals at J-18	33	87.0	2	5.2	0		3	7.8	38					
Grand totals	37	48.0	12	15.6	17	22.1	11	14.3	77	6		1		7

TABLE 36.—*Frequency of rim and vessel shapes of Embaúba Plain in sites of the Formiga Phase (fig. 80)*

Sites	Form 1		Form 2		Form 3		Form 4		Form 5		Form 6		Totals	Percentage
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage		
J-4	25	40.4	1	1.6	3	4.8	21	34.0	5	8.0	7	11.2	62	100.0
J-6: Cut 1—														
Level 0-15 cm	1						2				1		4	
Level 15-30 cm	24	40.7	17	28.8			8	13.6	9	15.2	1	1.7	59	100.0
Level 30-45 cm	17	43.6	10	25.7			5	12.8	5	12.8	2	5.1	39	100.0
Level 45-60 cm	1		1										2	
Level 60-75 cm														
Level 75-90 cm														
J-6: Cut 2—														
Level 0-15 cm	1						1						2	
Level 15-30 cm	2		1				5		1				9	
Level 30-45 cm	5		1				1						7	
Level 45-60 cm									1				1	
J-6: Cut 3—														
Level 0-15 cm			1				2						3	
Level 15-30 cm	3	25.0	1	8.3			4	33.4	3	25.0	1	8.3	12	100.0
Level 30-45 cm	14	56.0	1	4.0			1	4.0			9	36.0	25	100.0
Level 45-60 cm			1								1		2	
Totals at J-6	68	41.2	34	20.6			29	17.6	19	11.5	15	9.1	165	100.0
J-18—														
Level 0-15 cm					1		1		1				3	
Level 15-30 cm			1		4		3						8	
Level 30-45 cm			2		7								9	
Level 45-60 cm			1		2		1						4	
Level 60-75 cm														
Totals at J-18			4	16.7	14	58.3	5	20.8	1	4.2			24	100.0
Grand total	93		39		17		55		25		22		251	

TABLE 37.—*Frequency of rim and vessel shapes of Formiga Plain in sites of the Formiga Phase (fig. 81)*

Sites	Form 1		Form 2		Form 3		Form 4		Form 5		Totals	Percentage
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage		
J-4	8	26.7	3	10.0	14	46.7	4	13.3	1	3.3	30	100.0
J-6: Cut 1—												
Level 0-15 cm	2		1								3	
Level 15-30 cm	5	31.3	4	25.0			4	25.0	3	18.7	16	100.0
Level 30-45 cm	2	11.1	7	38.9			7	38.9	2	11.1	18	100.0
Level 45-60 cm			11	50.0	2	9.1	6	27.3	3	13.6	22	100.0
Level 60-75 cm			2		2		1				5	
Level 75-90 cm							2				2	
J-6: Cut 2—												
Level 0-15 cm												
Level 15-30 cm	2		1								3	
Level 30-45 cm	2				2		3		1		8	
Level 45-60 cm	1						1				2	
J-6: Cut 3—												
Level 0-15 cm					2				2		4	
Level 15-30 cm	2	6.3	5	15.6	11	34.4	9	28.1	5	15.6	32	100.0
Level 30-45 cm	6	37.5	2	12.5	6	37.5	2	12.5			16	100.0
Level 45-60 cm	2										2	
Totals at J-6	24	18.1	33	24.8	25	18.8	35	26.3	16	12.0	133	
J-18—												
Level 0-15 cm												
Level 15-30 cm			1		5						6	
Level 30-45 cm	2				2						4	
Level 45-60 cm					2				1		3	
Level 60-75 cm												
Totals at J-18	2		1		9				1		13	
Grand totals	34		37		48		39		18		176	

TABLE 38.—*Frequency of rim and vessel shapes of Mucajá Corrugated, Pseudo-Sipó Incised, and Saúba Brushed in sites of the Formiga Phase (figs. 82, 83, and 84)*

Sites	Rim and vessel forms of Mucajá Corrugated (fig. 82)					Rim and vessel forms of Pseudo-Sipó Incised (fig. 83)							Rim and vessel forms of Saúba Brushed (fig. 84)				
	Form 1		Form 2		Totals	Form 1		Form 2		Form 3		Totals	Form 1		Form 2		Totals
	Count	Percentage	Count	Percentage		Count	Percentage	Count	Percentage	Count	Percentage		Count	Percentage	Count	Percentage	
J-4	12	-----	-----	-----	12	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
J-6: Cut 1—																	
Level 0–15 cm	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----
Level 15–30 cm	-----	-----	-----	-----	-----	3	-----	6	-----	2	-----	11	-----	-----	-----	-----	-----
Level 30–45 cm	-----	-----	-----	-----	-----	1	-----	-----	-----	1	-----	2	1	-----	-----	-----	1
Level 45–60 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	1	-----	-----	-----	-----	-----
Level 60–75 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 75–90 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	1
J-6: Cut 2—																	
Level 0–15 cm	-----	-----	2	-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 15–30 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	1
Level 30–45 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 45–60 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
J-6: Cut 3—																	
Level 0–15 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 15–30 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 30–45 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 45–60 cm	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----
Totals at J-6	-----	-----	2	-----	-----	6	-----	6	-----	4	-----	-----	3	-----	0	-----	-----
J-18—																	
Level 0–15 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 15–30 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 30–45 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 45–60 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Level 60–75 cm	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Totals at J-18	0	-----	0	-----	-----	0	-----	0	-----	0	-----	-----	0	-----	0	-----	-----
Grand totals	12	-----	2	-----	14	6	-----	6	-----	4	-----	16	3	-----	0	-----	3

TABLE 39.—*Frequency of pottery types in J–15, Mound 14, cut 1, a habitation site of the Marajoara Phase (fig. 139)*

Pottery types	J-15: Mound 14—Inajasal (stratigraphic cut 1)																														Grand totals
	Surface collection		Level 0–15 cm.		Level 15–30 cm.		Level 30–45 cm.		Level 45–60 cm.		Level 60–75 cm.		Level 75–90 cm.		Level 90–105 cm.		Level 105–135 cm.		Level 135–150 cm.		Level 150–165 cm.		Level 165–180 cm.		Level 180–195 cm.		Level 195–210 cm.		Level 210–225 cm.		
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Plain Ware:																															
Camutins Plain	86	48.0	140	62.4	93	83.0	163	84.1	22	73.4	32	36.8	40	47.0	51	68.9	55	56.7	45	44.5	19	40.4	29	57.0	8	33.3	29	34.5	12	19.1	824
Inajá Plain	84	46.9	75	33.6	19	17.0	30	15.4	8	26.6	52	59.8	43	50.7	20	27.1	41	42.3	54	53.5	25	53.2	8	35.4	15	62.6	52	61.9	48	76.1	584
Decorated Ware:																															
Anajás Incised	6	3.4	8	3.6	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	2	2.0	---	-----	---	-----	---	-----	1	1.2	1	1.6	18
Ararí Excised	2	1.1	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	2
Joanes Painted	1	.6	1	.4	---	-----	1	.5	---	-----	3	3.4	2	2.3	3	4.0	1	1.0	---	-----	3	6.4	4	7.6	1	4.1	2	2.4	2	3.2	24
Totals	179	100.0	224	100.0	112	100.0	194	100.0	30	100.0	87	100.0	85	100.0	74	100.0	97	100.0	101	100.0	47	100.0	51	100.0	24	100.0	84	100.0	63	100.0	1,452

TABLE 40.—*Frequency of pottery types in stratigraphic excavations at J–14, Mound 1; J–15, Mound 1; and J–15, Mound 17, cemetery sites of the Marajoara Phase (fig. 140)*

Pottery types	J-14: Mound 1—Guajará (cut 1)				J-15: Mound 1—Camutins																J-15: Mound 17—Belém (cut 1)							
					Cut 2										Cut 3													
	Level 0–30 cm.		Level 30–60 cm.		Level 0–30 cm.		Level 30–60 cm.		Level 60–90 cm.		Level 90–120 cm.		Level 120–200 cm.		Level 0–30 cm.		Level 30–60 cm.		Level 60–90 cm.		Level 0–30 cm.		Level 30–60 cm.		Level 60–90 cm.		Level 90–120 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain ware:																												
Camutins Plain	110	48.5	46	31.7	437	67.5	226	66.0	153	61.5	95	47.8	55	39.3	29	31.5	87	42.6	34	39.0	137	64.5	99	47.1	81	28.6	13	8.8
Inajá Plain	74	32.6	65	45.0	151	23.2	65	18.9	49	19.7	57	28.6	62	44.3	47	51.1	88	43.2	41	47.1	54	25.3	94	44.8	171	60.4	118	81.0
Decorated ware:																												
Anajás Incised:																												
Anajás Plain Incised	5	2.2	5	3.4	12	1.8	7	2.0	10	4.0	7	3.5	4	2.9	2	2.2	5	2.5	2	2.3	3	1.4	2	.9	1	.3	---	-----
Anajás Red Incised	---	-----	---	-----	3	.4	1	.3	---	-----	---	-----	1	.7	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Anajás White Incised	---	-----	---	-----	---	-----	---	-----	1	.4	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	1	.3	---	-----
Anajás Double-Slipped Incised	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Ararí excised:																												
Ararí Plain Excised	2	.9	16	11.0	6	.9	16	4.7	8	3.2	---	-----	1	.7	3	3.3	2	.9	1	1.2	2	.9	4	1.9	1	.3	---	-----
Ararí Red Excised	---	-----	---	-----	1	.1	---	-----	1	.4	1	.5	2	1.4	---	-----	2	.9		-----	1	.5	2	.9	8	2.7	---	-----
Ararí White Excised	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Ararí Double-Slipped Excised	---	-----	---	-----	---	-----	---	-----	---	-----	1	.5	1	.7	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Ararí Red Excised, White Retouched	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	1	1.2	---	-----	---	-----	---	-----	---	-----
Carmelo Red	1	.4	---	-----	4	.6	1	.3	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Goiapí Scraped	---	-----	2	1.3	1	.1	---	-----	1	.4	13	6.6	---	-----	---	-----	1	.5	1	1.2	---	-----	---	-----	3	1.1	---	-----
Guajará Incised	4	1.8	---	-----	7	1.1	6	1.7	11	4.4	3	1.5	1	.7	---	-----	---	-----	---	-----	2	.9	1	.5	---	-----	---	-----
Joanes Painted	31	13.6	11	7.6	28	4.3	21	6.1	15	6.0	22	11.0	13	9.3	11	11.9	19	9.4	7	8.0	14	6.5	8	3.9	18	6.3	15	10.2
Totals	227	100.0	145	100.0	650	100.0	343	100.0	249	100.0	199	100.0	140	100.0	92	100.0	204	100.0	87	100.0	213	100.0	210	100.0	284	100.0	146	100.0

TABLE 41.—*Adjusted frequency of plain pottery types from 17 Marajoara Phase cemetery mounds (fig. 141)*

Sites	Camutins Plain		Inajá Plain		Totals
	Count	Percentage	Count	Percentage	
Furinho, surface	17	63.0	10	37.0	27
J-15: Mound 17, surface	137	60.4	90	39.6	227
J-14: Mound 1 [1]	99	60.0	66	40.0	165
J-15: Mound 1, surface	83	58.6	60	41.4	143
J-14; Mound 2, surface	12	50.0	12	50.0	24
Teso do Gentil: Mound 1, surface	10	50.0	10	50.0	20
Santa Brigida, surface	55	44.8	68	55.2	123
Teso dos China: Mound 1, level 0-15 cm	19	41.4	29	58.6	48
Ilha dos Bichos, surface	9	37.5	15	62.5	24
Cuieiras, surface	17	34.7	32	65.3	49
Teso dos China: Mound 1, level 15-30 cm	5	31.3	11	68.7	16
Teso dos China: Mound 2, surface	6	30.0	14	70.0	20
Fortaleza, surface	194	26.0	552	74.0	746
Pacoval (Peabody, Harvard Collection), surface	79	25.0	234	75.0	313
Teso dos China: Mound 4, surface	3	17.5	14	82.5	17
Teso do Severino, surface	21	14.4	125	85.6	146
Pacoval (Hilbert Collection) surface	43	14.0	264	86.0	307
Caratatéua, surface	4	9.1	40	90.9	44
Pacoval dos Mello, surface	6	8.0	65	92.0	71
Total	819		1,711		2,530

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[1] Derived from average of frequency in cut 1, level 0-15 cm. and level 15-30 cm. rather than from a surface collection.

TABLE 42.—*Frequency of the pottery types in surface collections from J–15 habitation mounds, Marajoara Phase (fig. 142)*

Pottery types	J–15: Mound 2 (surface collection)		J–15: Mound 3 (surface collection)		J–15: Mound 4 (surface collection)		J–15: Mound 5 (surface collection)		J–15: Mound 6 (surface collection)		J–15: Mound 7 (surface collection)		J–15: Mound 8 (surface collection)		J–15: Mound 9 (surface collection)		J–15: Mound 10 (surface collection)		J–15: Mound 11 (surface collection)		J–15: Mound 12 (surface collection)		J–15: Mound 13 (surface collection)		J–15: Mound 14 (surface collection)		J–15: Mound 15 (surface collection)		J–15: Mound 16 (surface collection)		J–15: Mound 18 (surface collection)	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain Ware:																																
Camutins Plain	3	60.0	38	55.0	67	60.9	23	37.7	84	58.0	55	44.8	81	57.9	51	53.7	31	52.5	66	52.5	46	40.7	50	46.4	86	48.0	71	49.0	53	44.1	62	52.6
Inajá Plain	2	40.0	31	45.0	42	38.1	35	57.4	61	42.0	65	52.7	54	38.6	42	44.3	27	45.8	49	38.8	66	58.3	58	53.6	84	46.9	66	45.5	56	46.7	49	41.5
Decorated Ware:																																
Anajás Incised	---	-----	---	-----	---	-----	---	-----	---	-----	3	2.5	3	2.1	2	2.0	1	1.7	---	-----	---	-----	---	-----	6	3.4	3	2.1	---	-----	3	2.5
Ararí Excised	---	-----	---	-----	1	1.0	---	-----	---	-----	---	-----	2	1.4	---	-----	---	-----	---	-----	---	-----	---	-----	2	1.1	---	-----	---	-----	1	.9
Joanes Painted	---	-----	---	-----	---	-----	3	4.9	---	-----	---	-----	---	-----	---	-----	---	-----	11	8.7	1	1.0	---	-----	1	.6	5	3.4	11	9.2	3	2.5
Totals	5	100.0	69	100.0	110	100.0	61	100.0	145	100.0	123	100.0	140	100.0	95	100.0	59	100.0	126	100.0	113	100.0	108	100.0	179	100.0	145	100.0	120	100.0	118	100.0

TABLE 43.—*Frequency of decorated pottery types at 4 Marajoara Phase cemetery mounds (fig. 143)*

Decorated pottery types	Pacoval (surface collection AMNH and Peabody, Harvard)		Fortaleza (surface collection Univ. Museum, Pa.)		Camutins (surface collection J-15: Mound 1)		Guajará (surface collection J-14: Mound 1)	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Anajás Incised:								
Anajás Plain Incised	103	7.6	26	5.4	69	22.6	19	18.7
Anajás Red Incised	49	3.7	8	1.7	5	1.6	------	------
Anajás White Incised	287	21.2	82	16.9	5	1.6	1	.9
Anajás Double-Slipped Incised	28	2.1	1	.2	------	------	------	------
Ararí Excised:								
Ararí Plain Excised	78	5.7	9	1.9	62	20.2	30	29.5
Ararí Red Excised	63	4.6	20	4.2	9	2.9	2	1.9
Ararí White Excised	28	2.1	6	1.2	5	1.6	------	------
Ararí Double-Slipped Excised	62	4.5	6	1.2	3	.9	------	------
Ararí Red Excised, White Retouch	39	2.9	6	1.2	2	.7	1	.9
Carmelo Red	5	.4	3	.6	------	------	1	.9
Goiapí Scraped	16	1.2	20	4.2	24	7.9	5	4.9
Guajará Incised	18	1.4	3	.6	13	4.3	9	8.8
Joanes Painted:								
Red-on-White	174	12.8	84	17.3	9	2.9	16	15.8
Black-on-White	14	1.1	1	.2	------	------	------	------
Red and Black-on-White	93	6.9	1	.2	7	2.3	------	------
White Slip only	75	5.5	154	31.8	93	30.5	18	17.7
Pacoval Incised	221	16.3	54	11.2	------	------	------	------
Totals	1,353	100.0	484	100.0	306	100.0	102	100.0

TABLE 44.—*Frequency of unusual pottery artifacts and adornos at four Marajoara Phase Cemetery Sites (fig. 144)*

Pottery artifacts and adornos	Pacoval (surface collection)		Fortaleza (surface collection)		Camutins J-15: Mound 1 (surface collection)		Guajara J-14: Mound 1 (surface collection)		Total
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
Stools	45	3.3	15	2.0	5	1.5	------	------	65
Spoons	12	.8	4	.5	1	.3	------	------	17
Hollow Rims	25	1.8	1	.1	------	------	------	------	26
Anthropomorphic and zoomorphic rim adornos	218	16.1	8	1.1	4	1.2	2	.7	232
Geometric rim adornos	66	4.9	12	1.6	13	4.0	------	------	91
Handles	12	.9	1	.1	2	.6	2	.7	17
Total	378	------	41	------	25	------	4	------	448
Percentage based on the total number of sherds from the surface collection of site	1,352	------	746	------	325	------	264	------	------

TABLE 45.—*Frequency of rim and vessel shapes of Camutins Plain in sites of the Marajoara Phase (figs. 121 and 122)*

Sites and strata cuts	Form 1		Form 2		Form 3		Form 4		Form 5		Form 6		Form 7		Form 8		Form 9		Totals per level	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
J-15: Mound 1, Cut 2—																				
Level 0–30 cm	22	66.8	4	12.1					5	15.1	1	3.0	1	3.0					33	100.0
Level 30–60 cm	25	89.5			1	3.5	1	3.5			1	3.5							28	100.0
Level 60–90 cm	21	84.0	1	4.0	2	8.0			1	4.0									25	100.0
Level 90–120 cm	12	87.0	1	71.5											1	71.5			14	100.0
Level 120–200 cm	6	60.0	3	30.0	1	10.0													10	100.0
J-15: Mound 1, Cut 3—																				
Level 0–30 cm	4	57.1	1	14.3											2	28.6			7	100.0
Level 30–60 cm	11	65.0	2	11.7	1	5.8			1	5.8					2	11.7			17	100.0
Level 60 90 cm	2										1								3	100.0
J-15: Mound 17, Cut 1—																				
Level 0–30 cm	10	55.6	4	22.2							4	22.2							18	100.0
Level 30–60 cm	4		2																6	
Level 60–90 cm	7	58.3	3	25.0	2	16.7													12	100.0
Level 90–120 cm			1																1	
J-15: Mound 14, Cut 1—																				
Level 0–15 cm	14	93.4	1	6.6															15	100.0
Level 15–30 cm	22	100.0																	22	100.0
Level 30–45 cm	19	86.5							1	4.5							2	9.0	22	100.0
Level 45–60 cm	2																		2	
Level 60–75 cm	3																		3	
Level 75–90 cm	2																		2	
Level 90–105 cm	6																		6	
Level 105–135 cm	12	92.5	1	7.5															13	100.0
Level 135–150 cm	7	100.0																	7	100.0
Level 150–165 cm	7	100.0																	7	100.0
Level 165–180 cm	2																		2	
Level 180–195 cm																			0	
Level 195–210 cm	10	100.0																	10	100.0
Level 210–225 cm	2																		2	
Totals per form	232		24		7		1		8		7		1		5		2		287	

TABLE 46.—*Frequency of rim and vessel shapes of Inajá Plain in sites of the Marajoara Phase (figs. 121 and 122)*

Sites and strata cuts	Form 1		Form 2		Form 3		Form 4		Form 5		Form 6		Form 7		Form 8		Form 9		Totals per level	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
J-15: Mound 1, Cut 2—																				
Level 0–30 cm	14	48.4	6	20.7	3	10.3			2	6.9	3	10.3			1	3.4			29	100.0
Level 30–60 cm	4	57.1	2	28.6					1	14.3									7	100.0
Level 60–90 cm	7																		7	
Level 90–120 cm	5				1														6	
Level 120–200 cm	5	55.6	1	11.1					2	22.2	1	11.1							9	100.0
J-15: Mound 1, Cut 3—																				
Level 0–30 cm	15	88.4			1	5.8											1	5.8	17	100.0
Level 30–60 cm	20	71.5	1	3.6	2	7.1	1	3.6	2	7.1							2	7.1	28	100.0
Level 60–90 cm	15	94.0							1	6.0									16	100.0
J-15: Mound 17, Cut 1—																				
Level 0–30 cm	4																		4	
Level 30–60 cm	24	92.4							1	3.8							1	3.8	26	100.0
Level 60–90 cm	15	55.6	2	7.4	5	18.5			2	7.4	2	7.4			1	3.7			27	100.0
Level 90–120 cm	3	42.8	2	28.6	2	28.6													7	100.0
J-15: Mound 14, Cut 1—																				
Level 0–15 cm	3																		3	
Level 15–30 cm	4																		4	
Level 30–45 cm	5																		5	
Level 45–60 cm	1																		1	
Level 60–75 cm	7	77.8	1	11.1					1	11.1									9	100.0
Level 75–90 cm	9	81.8	1	9.1	1	9.1													11	100.0
Level 90–105 cm	6	85.7							1	14.3									7	100.0
Level 105–135 cm	12	85.8													1	7.1	1	7.1	14	100.0
Level 135–150 cm	23																		23	
Level 150–165 cm	10																		10	
Level 165–180 cm	7																		7	
Level 180–195 cm	2																		2	
Level 195–210 cm	15	88.2	1	5.9											1	5.9			17	100.0
Level 210–225 cm	10	83.4			1	8.3			1	8.3									12	100.0
Totals per form	245		17		16		1		14		6				4		5		308	

TABLE 47.—*Frequency of rim and vessel shapes of Joanes Painted in sites of the Marajoara Phase (fig. 127)*

Sites and strata cuts	Form 1		Form 2		Form 3		Form 4		Form 5		Form 6		Form 7		Form 8		Form 9		Form 10		Form 11		Form 12		Form 13		Form 14		Totals per level	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
J-15: Mound 1, Cut 2—																														
Level 0-30 cm	3	30.0	---	-----	6	60.0	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	9	100.0
Level 30-60 cm	3	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	1	-----	4	-----
Level 60-90 cm	---	-----	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	1	-----
Level 90-120 cm	1	20.0	---	-----	4	80.0	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	5	100.0
Level 120-200 cm	2	-----	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	3	-----
J-15: Mound 1, Cut 3—																														
Level 0-30 cm	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	1	-----
Level 30-60 cm	3	-----	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	2	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	6	-----
Level 60-90 cm	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
J-15: Mound 17, Cut 1—																														
Level 0-30 cm	1	-----	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	2	-----
Level 30-60 cm	---	-----	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	1	-----
Level 60-90 cm	3	-----	---	-----	---	-----	---	-----	---	-----	1	-----	---	-----	3	-----	---	-----	---	-----	---	-----	---	-----	1	-----	---	-----	8	-----
Level 90-120 cm	1	-----	---	-----	---	-----	---	-----	---	-----	1	-----	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	3	-----
J-15: Mound 14, Cut 1—																														
Level 0-15 cm	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Level 15-30 cm	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Level 30-45 cm	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Level 45-60 cm	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Level 60-75 cm	2	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	2	-----
Level 75-90 cm	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Level 90-105 cm	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	1	-----
Level 105-135 cm	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Level 135-150 cm	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Level 150-165 cm	---	-----	---	-----	1	-----	---	-----	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	2	-----
Level 165-180 cm	---	-----	---	-----	2	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	2	-----
Level 180-195 cm	---	-----	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	1	-----
Level 195-210 cm	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Level 210-225 cm	---	-----	---	-----	---	-----	---	-----	---	-----	1	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	1	-----
Totals per form	20	-----	1	-----	19	-----	0	-----	0	-----	4	-----	0	-----	6	-----	0	-----	0	-----	0	-----	0	-----	1	-----	1	-----	52	-----
	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----

TABLE 48.—*Frequency of pottery types in surface collection and stratigraphic excavations at Site M–3 of the Acauan Phase*

Pottery types	M—3: Acauan																	
	Md. 1: Surface		Md. 1: Cut 1				Md. 1: Cut 2						Md. 1: Cut 3					
			Level 0—15 cm.		Level 15—30 cm.		Level 0—8 cm.		Level 8—16 cm.		Level 16—24 cm.		Level 0—8 cm.		Level 8—16 cm.		Level 16—24 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Acauan Excised	16	12.9	72	5.8	30	5.2	20	7 5	64	6.3	24	10.3	26	5.4	76	7.0	5	4.1
Carobal Incised	------	------	39	3.1	12	2.1	19	7.2	55	5.5	5	2.1	15	3.1	65	5.9	2	1.6
Floripes Corrugated	11	8.9	110	8.8	164	28.5	58	22.0	265	26.2	67	28.7	61	12.7	232	21.3	38	31.0
Paciencia Scraped	4	3.2	123	9.8	15	2.6	18	6.8	52	5.1	18	7.7	8	1.6	38	3.5	5	4.1
Piryzal Plain	85	68.5	837	66.8	341	59.5	138	52.3	556	55.0	118	50.8	343	71.2	624	57.1	69	56.0
Vergal Incised	8	6.5	71	5.7	11	1.9	11	4.2	13	1.3	1	.4	22	4.6	44	4.0	4	3.2
Unclassified	------	------	------	------	1	.2	------	------	6	.6	------	------	7	1.4	12	1.2	------	------
Totals	124	100.0	1,252	100.0	574	100.0	264	100.0	1,011	100.0	233	100.0	482	100.0	1,091	100.0	123	100.0

TABLE 48.—*Frequency of pottery types in surface collection and stratigraphic excavations at Site M-3 of the Acauan Phase*—Continued

Pottery types	M—3: Acauan															
	Md. 1: Cut 4						Md. 1: Cut 5		Totals of cuts only of Md. 1		Md. 2: Cut 6				Totals from Mound 2	
	Level 0—8 cm.		Level 8—16 cm.		Level 0—16 cm.		Level 8—16 cm.				Level 0—8 cm.		Level 8—16 cm.			
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Acauan Excised	132	6.0	31	4.2	88	9.7	57	6.5	625	6.4	1	.2	------	------	1	------
Carobal Incised	100	4.5	19	2.4	21	2.3	20	2.2	372	3.8	1	.2	1	1.1	2	------
Floripes Corrugated	407	18.3	181	23.7	193	21.2	236	26.5	2,012	20.5	12	2.7	1	1.1	13	------
Paciencia Scraped	96	4.3	70	9.2	19	2.0	21	2.4	483	4.9	------	------	2	2.2	2	------
Piryzal Plain	1,453	65.6	463	60.2	570	62.6	525	58.8	6,037	61.5	418	96.3	83	94.5	501	------
Vergal Incised	19	1.0	1	.1	20	2.2	32	3.6	249	2.5	3	.6	1	1.1	4	------
Unclassified	14	.3	2	.2	------	------	------	------	42	.4	------	------	------	------	------	------
Totals	2,221	100.0	767	100.0	911	100.0	891	100.0	9,820	100.0	435	100.0	88	100.0	523	------

TABLE 49.—*Frequency of rim and vessel shapes of Acauan Excised, Carobal Incised and Paciencia Scraped of the Acauan Phase (figs. 159 160, and 162)*

Site M-3—Acauan	Rim and vessel shapes of Acauan Excised (fig. 159)									Rim and vessel shapes of Carobal Incised (fig. 160)									Rim and vessel shapes of Paciencia Scraped (fig. 162)				
	Form 1		Form 2		Form 3		Form 4		Totals per level	Form 1		Form 2		Form 3		Form 4		Totals per level	Form 1		Form 2		Totals per level
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage		Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage		Count	Percentage	Count	Percentage	
Strata cuts and levels (Mound 1 only):																							
Cut 1: Level 0–15 cm	3	23.2	5	38.4	5	38.4	----	------	13	----	------	2	28.5	1	14.3	4	57.2	7	2	16.5	10	83.5	12
Cut 1: Level 15–30 cm	1	------	----	------	----	------	----	------	1	----	------	2	------	----	------	----	------	2	1	------	1	------	2
Cut 2: Level 0–8 cm	2	20.0	2	20.0	6	60.0	----	- ----	10	----	------	----	------	----	------	2	------	2	----	------	5	------	5
Cut 2: Level 8–16 cm	6	37.4	7	43.6	3	18.7	----	------	16	----	------	2	------	1	------	----	------	3	----	------	9	------	9
Cut 2: Level 16–24 cm	----	------	----	------	----	------	----	------	------	1	------	----	------	----	------	----	------	1	----	------	----	------	------
Cut 3: Level 0–8 cm	3	75.0	1	25.0	----	------	----	------	4	1	------	----	------	----	------	----	------	1	----	------	----	------	------
Cut 3: Level 8–16 cm	6	60.0	2	20.0	2	20.0	----	------	10	1	------	1	------	----	------	4	------	6	2	------	----	------	2
Cut 3: Level 16–24 cm	1	------	2	------	----	------	----	------	3	----	------	----	------	----	------	----	------	------	----	------	----	------	------
Cut 4: Level 0–8 cm	10	59.0	2	11.7	4	23.5	1	5.8	17	1	9.1	5	45.3	2	18.3	3	27.3	11	4	80.0	1	20.0	5
Cut 4: Level 8–16 cm	2	20.0	8	80.0	----	------	----	------	10	----	------	----	------	----	------	----	------	------	2	25.0	6	75.0	8
Cut 5: Level 0–8 cm	4	33.4	5	41.6	2	16.7	1	8.3	12	1	------	----	------	----	------	----	------	1	1	------	----	------	1
Cut 5: Level 8–16 cm	5	45.5	4	36.4	----	------	2	18.1	11	----	------	----	------	3	------	----	------	3	1	------	1	------	2
Grand totals of each vessel form	43	------	38	------	22	------	4	------	107	5	------	12	------	7	--- -	13	------	37	13	------	33	------	46

TABLE 50.—*Frequency of rim and vessel shapes of Piryzal Plain of the Acauan Phase (fig. 163)*

Site M-3—Acauan	Form 1		Form 2		Form 3		Form 4		Form 5		Form 6		Form 7		Form 8		Totals per level	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Strata cuts and levels (Mound 1 only):																		
Cut 1: Level 0–15 cm	6	8.0	16	21.6	8	10.7	1	1.2	10	13.3	21	28.0	8	10.7	5	6.5	75	100.0
Cut 1: Level 15–30 cm	6	18.7	9	28.2	2	6.2	1	3.1	------	------	8	25.1	5	15.6	1	3.1	32	100.0
Cut 2: Level 0–8 cm	------	------	2	18.2	1	9.1	------	------	------	------	5	45.5	3	27.2	------	------	11	100.0
Cut 2: Level 8–16 cm	5	13.9	4	11.1	4	11.1	------	------	5	13.9	10	27.8	6	16.7	2	5.5	36	100.0
Cut 2: Level 16–24 cm	1	10.0	3	30.0	------	------	------	------	------	------	2	20.0	2	20.0	2	20.0	10	100.0
Cut 3: Level 0–8 cm	4	25.0	8	50.0	------	------	------	------	------	------	2	12.5	------	------	2	12.5	16	100.0
Cut 3: Level 8–16 cm	10	17.4	13	22.4	2	3.4	1	1.7	7	12.0	9	15.5	8	13.8	8	13.8	58	100.0
Cut 3: Level 16–24 cm	------	------	1	------	------	------	------	------	------	------	2	------	------	------	------	------	3	------
Cut 4: Level 0–8 cm	14	13.6	10	9.7	11	10.7	1	.9	4	3.8	26	25.3	20	19.4	17	16.6	103	100.0
Cut 4: Level 8–16 cm	4	11.8	13	38.4	1	2.9	------	------	3	8.8	7	20.5	5	14.7	1	2.9	34	100.0
Cut 5: Level 0–8 cm	11	18.1	11	18.1	2	3.2	2	3.2	10	16.4	15	24.6	10	16.4	------	------	61	100.0
Cut 5: Level 8–16 cm	6	12.7	7	14.8	2	4.3	2	4.3	5	10.6	10	21.3	15	32.0	------	------	47	100.0
Grand totals of each vessel form	67	------	97	------	33	------	8	------	44	------	117	------	82	------	38	------	486	------

TABLE 51.—*Frequency of pottery types at sites of the Aruã Phase*

Sites	Piratuba Plain		Aberta Incised		Nazaré Brushed		Unclassified Decorated		Totals
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	
A-5: Cafezal	230								230
A-8: Aurora	36	60.0	30	40.0					66
A-23: Ilha da Fortaleza	363						1		364
C-1: Teso das Igaçabas:									
Sherds	453								460
Vessels	7								
C-4: Teso dos Indios:									
Sherds	243								261
Vessels	18								
C-5: Morera	606								606
C-6: Croatasal	809								809
C-6: Croatasal Section A	744						1		745
C-7: São Domingo	607								607
C-8: Pacajá	646								646
C-9: Frei João	1,258	99.5					7	.5	1,265
C-10: São Bento	315								315
C-11: Vaquejador de São Sebasteão	976								976
C-12: Condino	516								516
C-13: Alta Piratuba	724								724
C-14: Limãozinho	525								525
C-15: Patahua	126								126
J-2/3: Chaves Airport	884	98.8			2	.2	9	1.0	895
J-11: Carmo	28								28
M-2: Papa Cachorro	976	95.3	25	2.5	10	.9	13	1.3	1,024
M-4: Fundo das Panellas:									
Vessels	57						1		58
M-5: Mulatinho:									
Sherds	1,275								1,312
Vessels	37								
M-7: Aberta	131	87.0	3	2.0	8	5.0	9	6.0	151
Totals	12,590		58		20		41		12,709

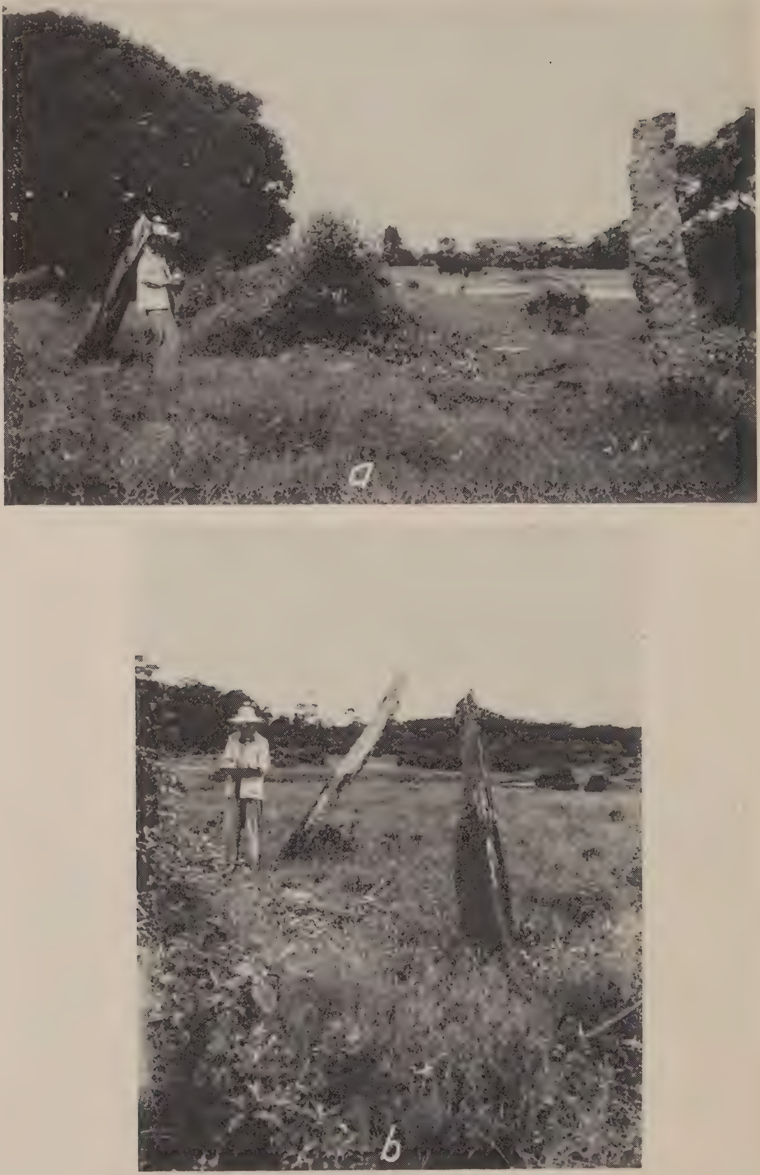
TABLE 52.—*Frequency of rim and vessel shapes of Piratuba Plain in sites of the Aruã Phase (figs. 196, 197, and 201)*

Vessel shapes	Site A-5		Site A-8		Site A-23		Site C-1		Site C-4		Site C-5		Site C-6		Site C-6—Section A		Site C-7		Site C-8		Site C-9		Site C-10	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Bowls:																								
Form 1																					1	1.2		
Form 2							1	2.8	1	2.2			8	9.1	3	1.3	1	2.9			6	7.5	1	4.8
Form 3							2	5.5	4	8.9	4	9.7					1	2.9	9	14.4			4	19.0
Form 4	1	8.3			1		7	19.4			1	2.4	8	9.1	37	16.0	3	8.9	2	3.2	6	7.5	1	4.8
Form 5															2	.9			1	1.5	1	1.2		
Form 6	1	8.3					2	5.5	4	8.9	1	2.4	2	2.2	3	1.3	2	5.9	3	4.7	10	12.5	1	4.8
Form 7	2	16.7			1		4	11.1	4	8.9	13	31.8	4	4.4	55	23.8	6	17.7	22	35.0	10	12.5	2	9.5
Form 8	1	8.3					1	2.8											1	1.5	5	6.3		
Form 9											5	12.2							9	14.4	2	2.5	1	4.8
Form 10															1	.5					2	2.5		
Form 11																								
Jars:																								
Form 12																								
Form 13									10	22.3			1	1.1	3	1.3	2	5.9						
Form 14							1	2.8					1	1.1	6	2.6								
Form 15	1	8.3					6	16.8	3	6.7	1	2.4	1	1.1	6	2.6					8	10.0	1	4.8
Form 16	2	16.7			1						1	2.4							1	1.5	8	10.0	2	9.5
Form 17							7	19.4	15	33.3	8	19.6	35	39.9	85	36.8	6	17.7	9	14.4	9	11.3	5	23.7
Form 18	1	8.3			1																			
Form 19							1	2.8	2	4.4	7	17.1	15	17.2	13	5.6			5	7.9	2	2.5	3	14.3
Form 20					2												2	5.9			2	2.5		
Additions:																								
Applique	3	25.1					4	11.1	2	4.4			12	13.7	17	7.3	2	5.9	1	1.5	6	7.5		
Feet													1	1.1			6	17.7						
Handles																	3	8.9			2	2.5		
Totals	12	100.0			6		36	100.0	45	100.0	41	100.0	88	100.0	231	100.0	34	100.0	63	100.0	80	100.0	21	100.0

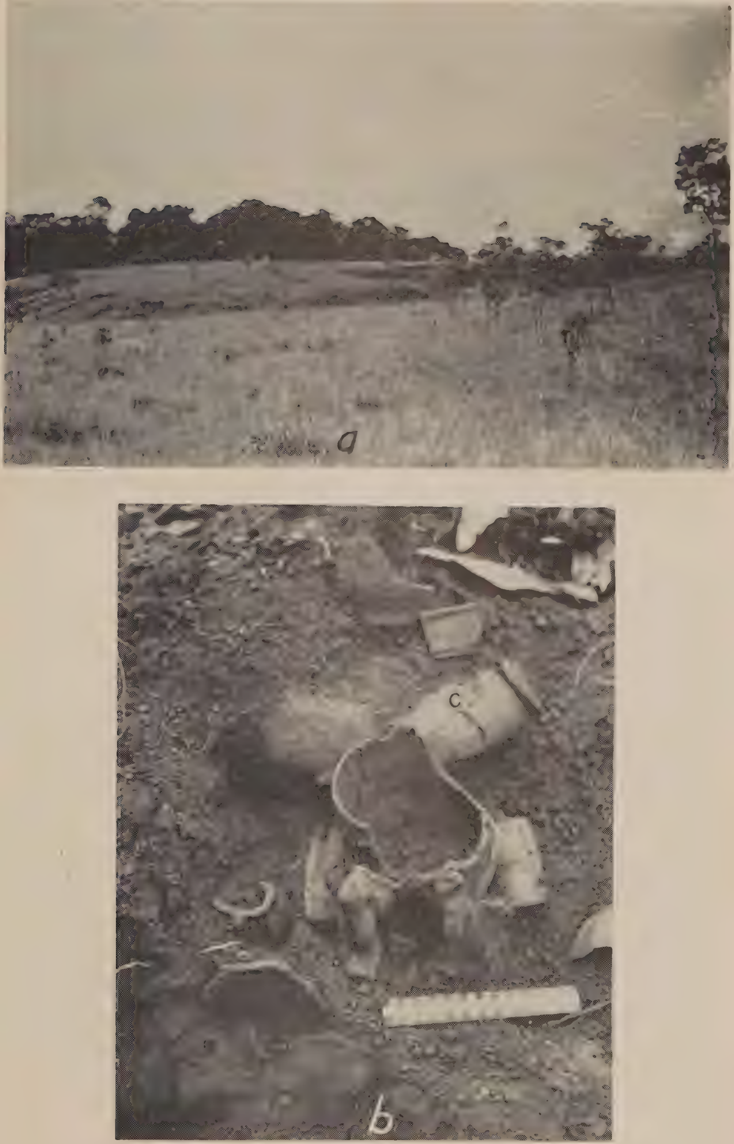
TABLE 52.—*Frequency of rim and vessel shapes of Piratuba Plain in sites of the Aruã Phase (figs. 196, 197, and 201)*—Continued

Vessel shapes	Site C-11		Site C-12		Site C-13		Site C-14		Site C-15		Site J-2/3		Site J-11		Site M-2		Site M-4		Site M-5		Site M-7	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Bowls:																						
Form 1			1	1.7											5	5.5	1	1.4	2	2.5		
Form 2			3	5.1	1	1.9	6	14.6	2	12.5	1	3.7	1		11	11.9	5	7.1	7	8.7	4	23.5
Form 3	14	28.0	9	15.4	5	9.4	5	12.2							12	12.9	10	14.1	13	16.4	3	17.7
Form 4	3	6.0	6	10.2					2	12.5	3	11.1	1		2	2.1	1	1.4	9	11.2	2	11.7
Form 5					1	1.9	1	2.4			5	18.5					4	5.6	1	1.2		
Form 6	2	4.0	6	10.2	6	11.3	5	12.2	2	12.5	1	3.7			18	19.6	1	1.4	5	6.3	3	17.8
Form 7	4	8.0	5	8.3	3	5.5	4	9.7	4	25.0	7	26.0			3	3.4	7	9.9	6	7.5		
Form 8			1	1.7	3	5.5																
Form 9			2	3.4			2	4.9														
Form 10																						
Form 11	1	2.0	1	1.7	2	3.7					2	7.4										
Jars:																						
Form 12																	7	9.9	4	5.0		
Form 13																						
Form 14																						
Form 15	3	6.0	6	10.2									1				10	14.1	13	6.3		
Form 16	5	10.0	6	10.2							4	14.8			20	21.7	13	18.3	9	11.2	2	11.7
Form 17	6	12.0	4	6.8	16	30.7	4	9.7	2	12.5	4	14.8			8	8.8	3	4.2	3	3.8		
Form 18			1	1.7	11	20.8	3	7.4							9	9.9	2	2.8			2	11.7
Form 19	2	4.0	1	1.7	2	3.7	9	22.0									2	2.8	1	1.2		
Form 20	1	2.0	1	1.7	1	1.9	2	4.9							4	4.2	1	1.4	1	1.2	1	5.9
Additions:																						
Applique	6	12.0	6	10.0	2	3.7											4	5.6	6	7.5		
Fleet	3	6.0							4	25.0												
Handles													1									
Totals	50	100.0	59	100.0	53	100.0	41	100.0	16	100.0	27	100.0	4		92	100.0	71	100.0	80	100.0	17	100.0

Views of the Rio Araguarí above its junction with the Rio Amaparí, Territory of Amapá. *a*, Steep hill typical of those that occasionally break the low shore line. *b*, Rapids in the early rainy season when a few rocks still protrude.

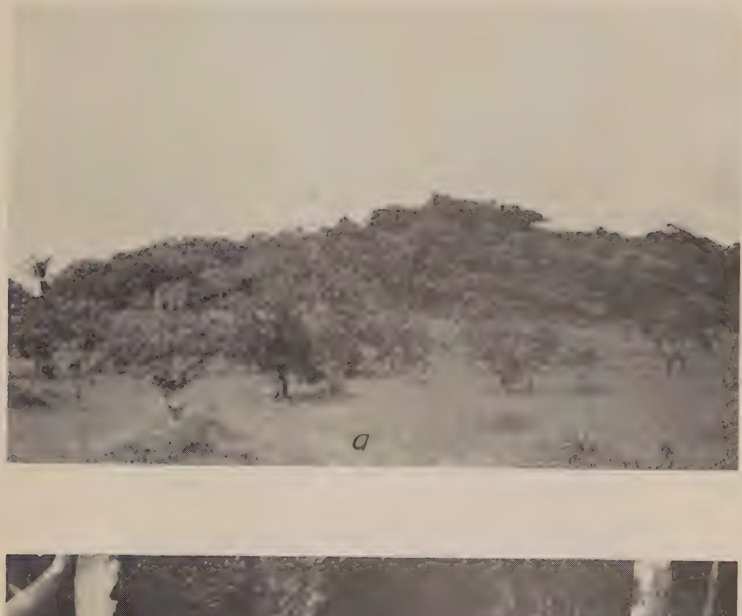


Aruã Phase stone alinement at A–8—Aurora in the central part of the Territory of Amapá.

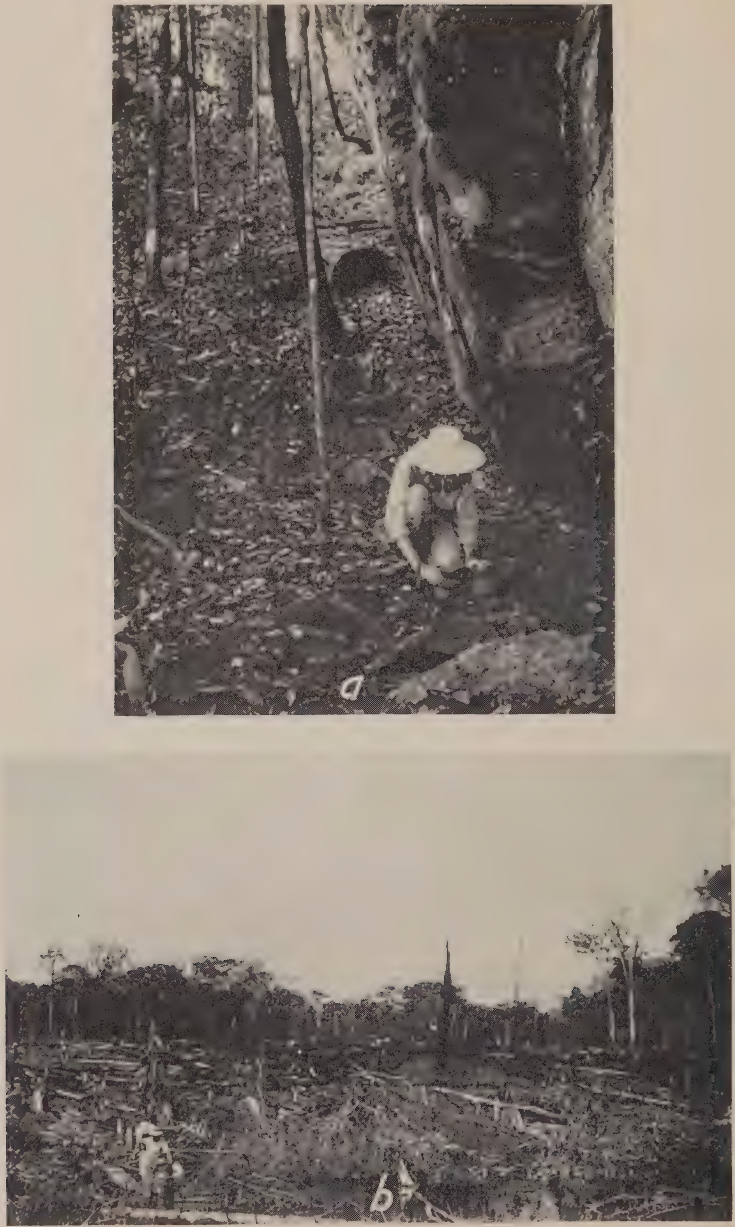


Mazagão Phase sites in the southern part of the Territory of Amapá. *a*, Vicinity of A–6—Ilha das Igaçabas; the habitation site is located just inside the area of trees. *b*, Detail of excavation at A–4—Valentim, showing vessels of Burial Group 2 in situ.

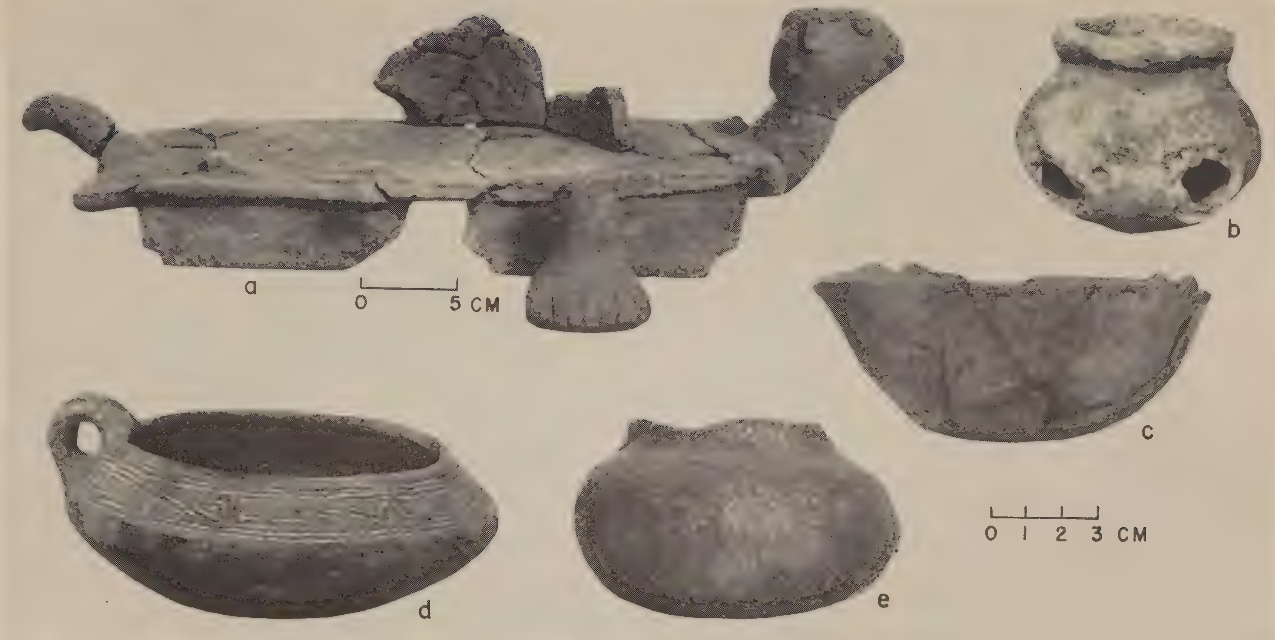
Aristé Phase habitation site of A–9—Relógio and its environment in the central part of the Territory of Amapá. *a,* Looking toward the site, located in the trees on the left. *b,* The Rego do Cajú showing the typical shallow lake and swamp vegetation on this part of the Territory.



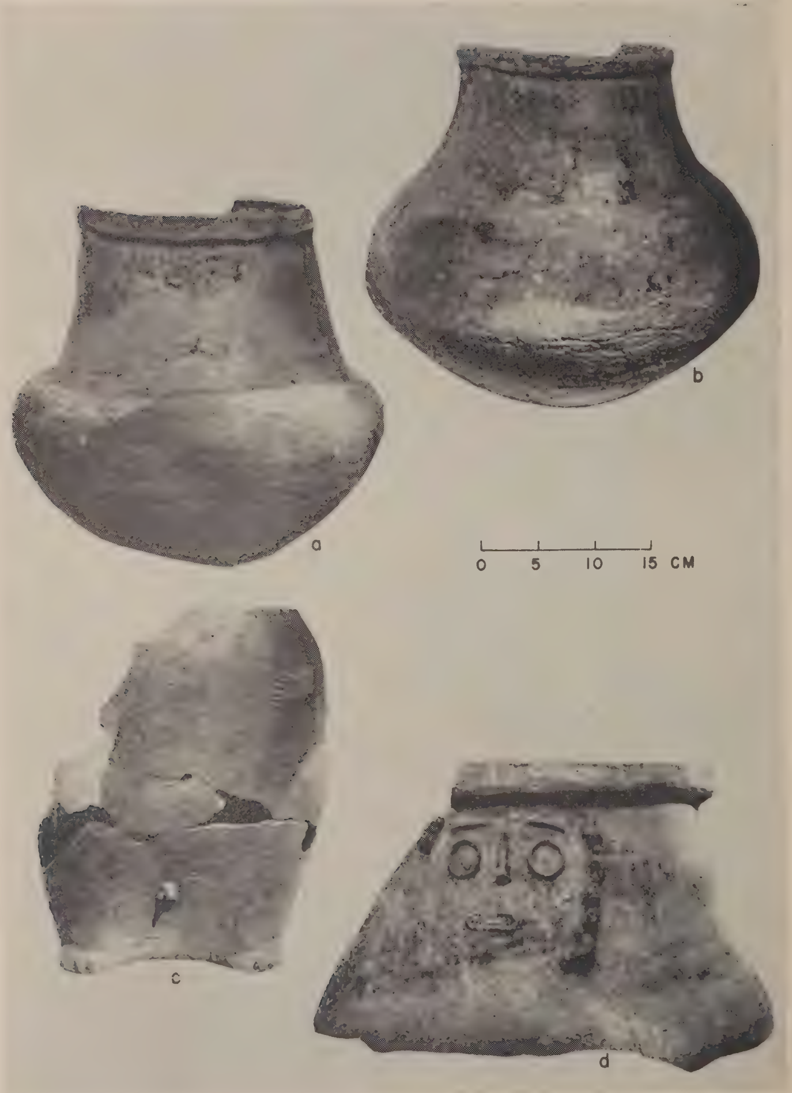
Aristé Phase burial site of A–10—Montanha da Pluma in the northern part of the Territory of Amapá. *a*, Tree-covered hillside with granite outcrops in which the site is located. *b*, Closeup of the cave mouth during excavation of the broken vessels.



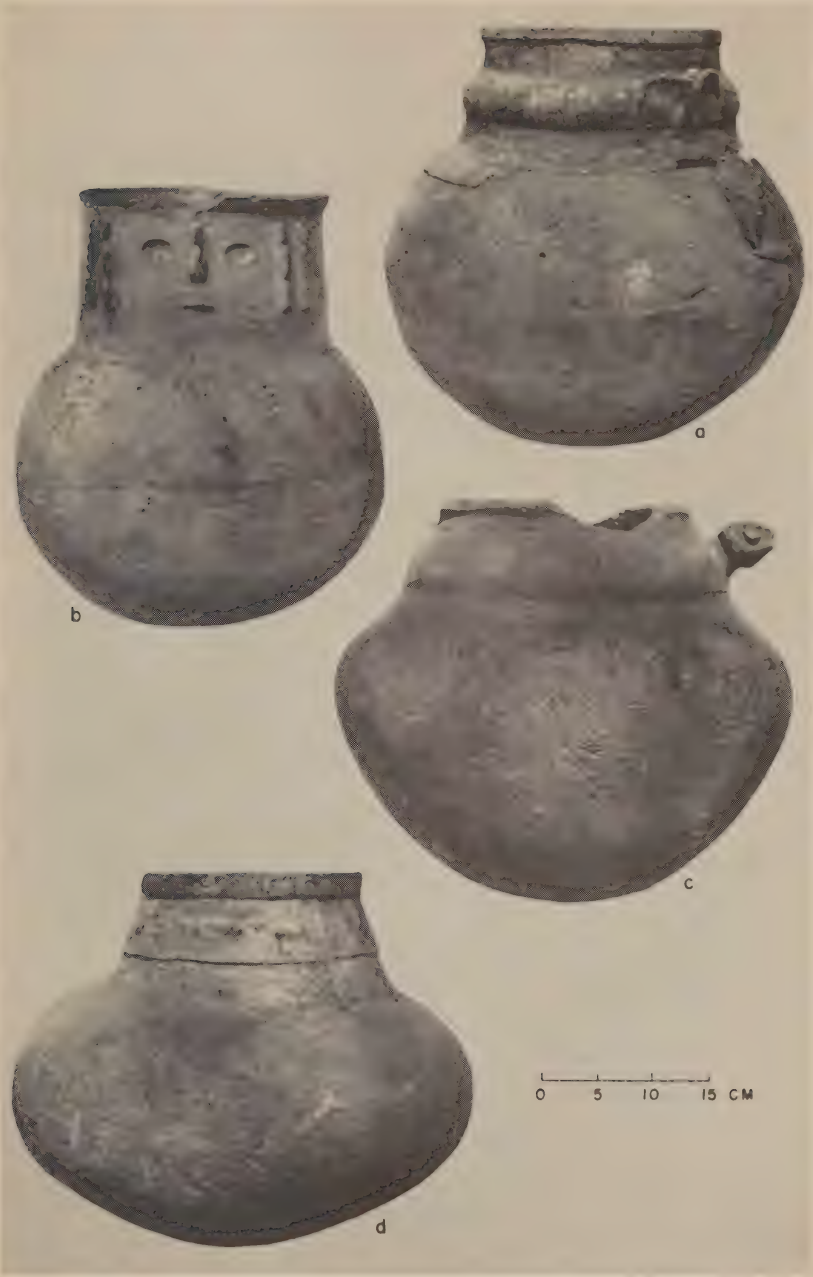
Aristé Phase sites in the northern part of the Territory of Amapá. *a*, A–11—Montanha de Aristé, Cave 1, with broken burial urns along the base of the nearly vertical face of a large granite outcrop. *b*, Habitation site of A–12—Cruzeiro, with the Igarapé da Rasa in the foreground. The site and the surrounding area have been cleared for modern cultivation.



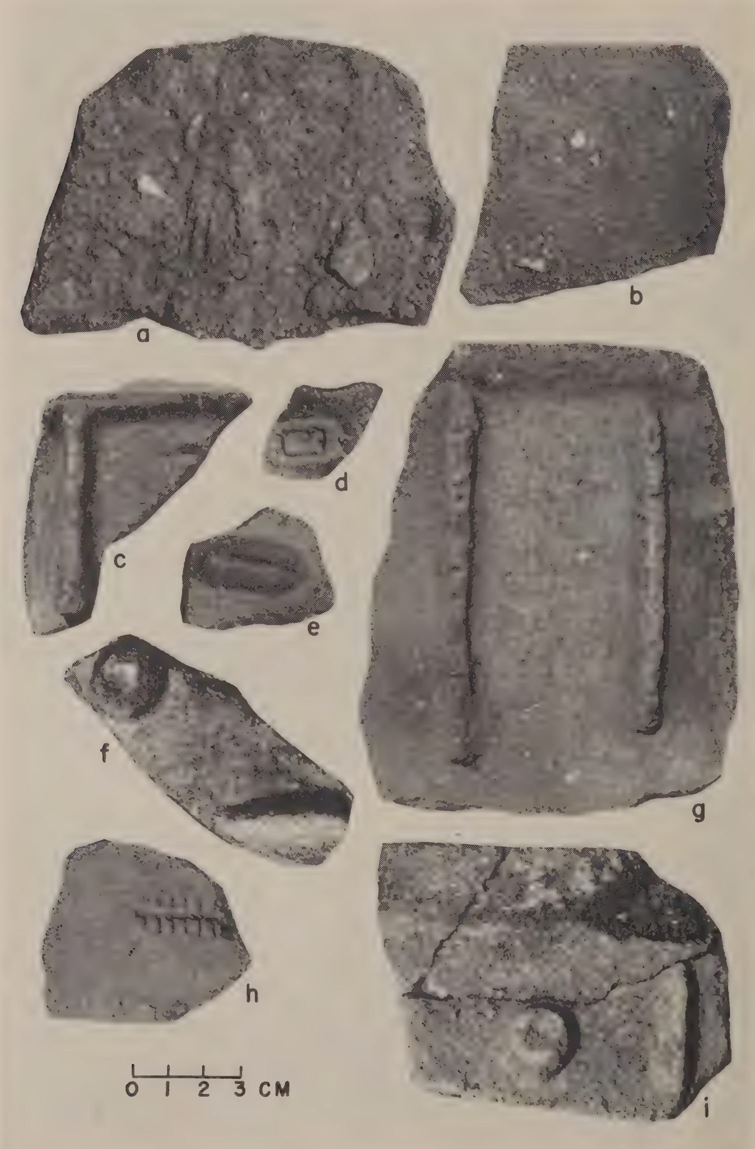
Mazagão Phase vessels from A 3—Piçacá Cemetery. *a*, Mazagão Plain pottery bench from anthropomorphic vessel Z, Burial Group 1. *b*, Vilanova Plain miniature jar associated with Burial 4. *c*, Mazagão Plain bowl associated with vessel C of Burial Group 1. *d*, Anauerapucú Incised bowl associated with Burial 4. *e*, Mazagão Plain miniature jar associated with vessel C of Burial Group 1.



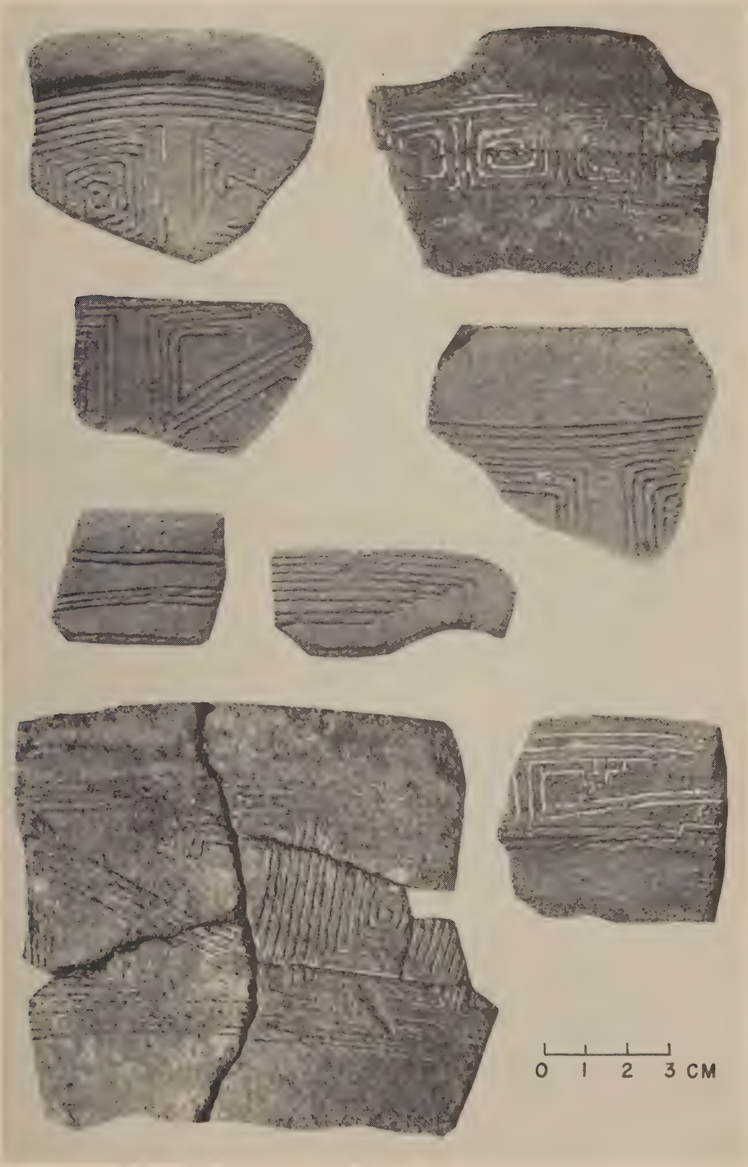
Camaipí Plain vessels collected by Lima Guedes from the Rio Vilanova and now in the Museu Paraense Emilio Goeldi.



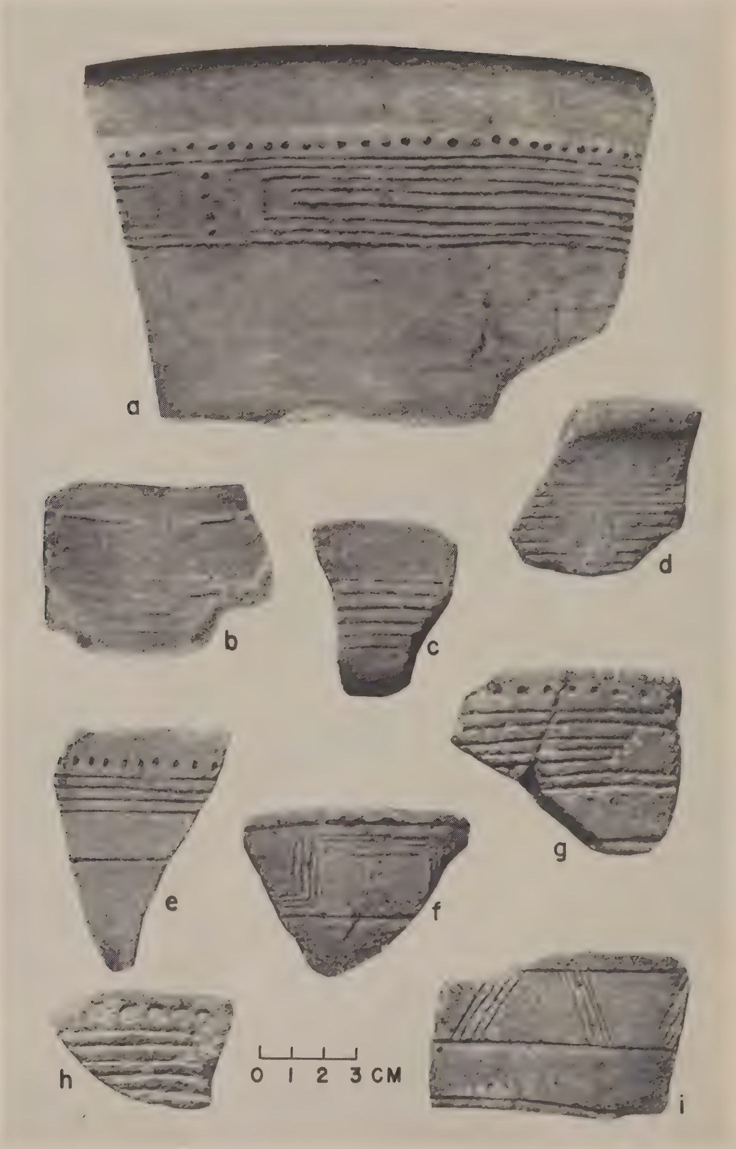
Mazagão Phase vessels collected by Lima Guedes from the Rio Vilanova and now in the Museu Paraense Emilio Goeldi. *a–c*, Mazagão Plain. *d*, Vilanova Plain.


a
b
c
d
e
f
g
h
i
0 1 2 3 CM

Mazagão Plain sherds showing coarse quartz temper and typical applique decoration.



Type sherds of Anauerapucú Incised, Mazagão Phase.


a
b
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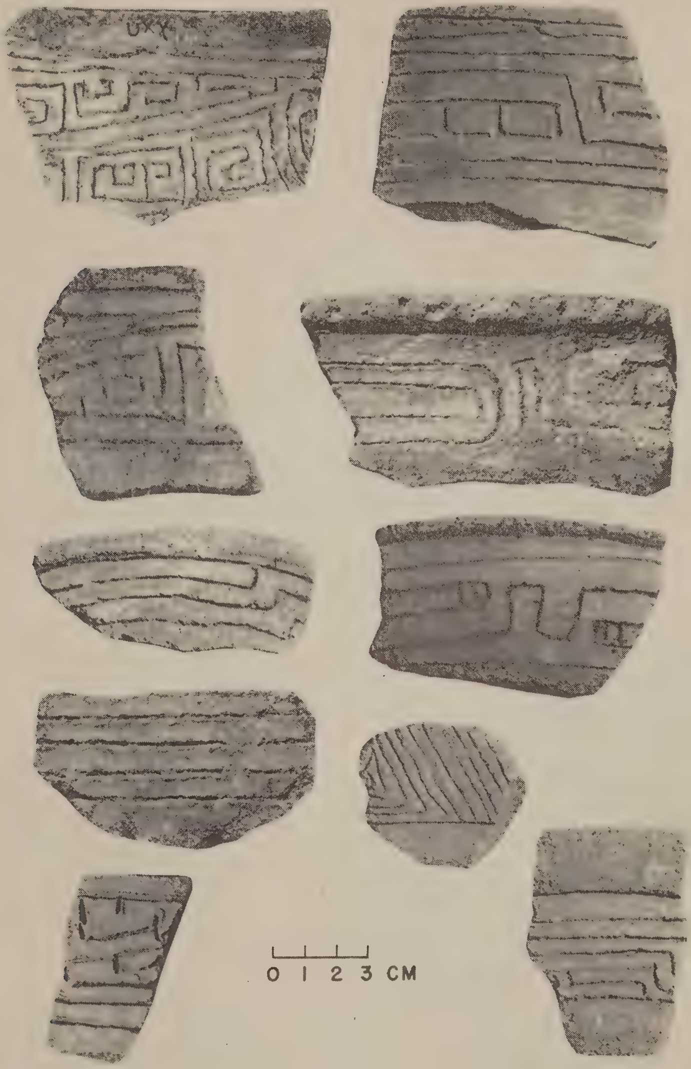
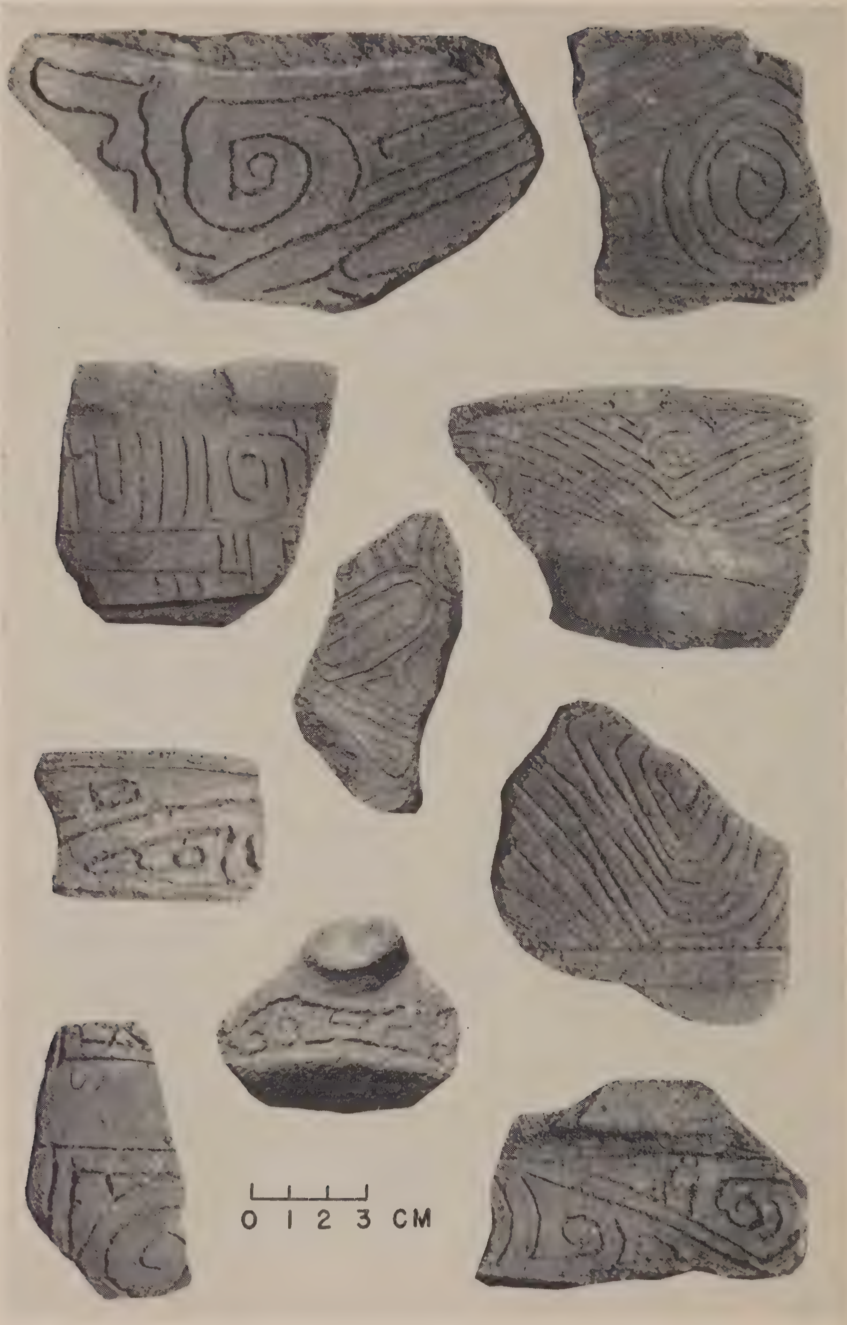
0 1 2 3 CM
i

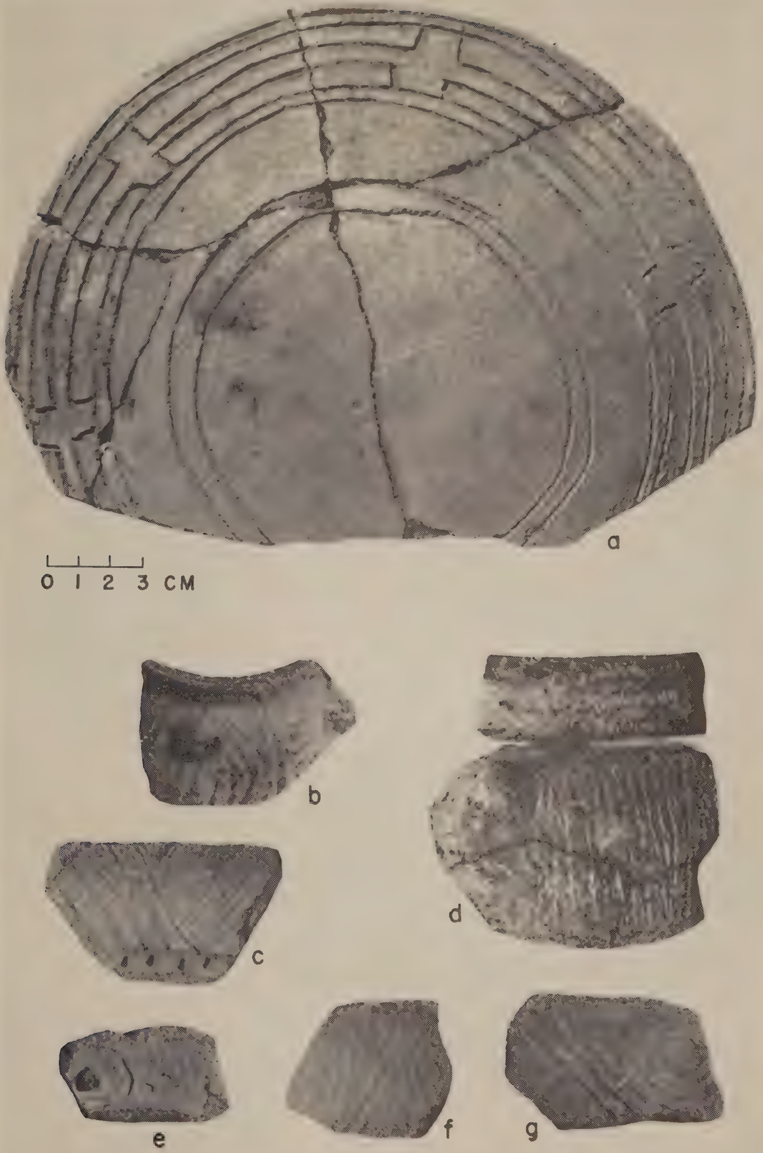
Type sherds of Piçacá Incised, Mazagão Phase.



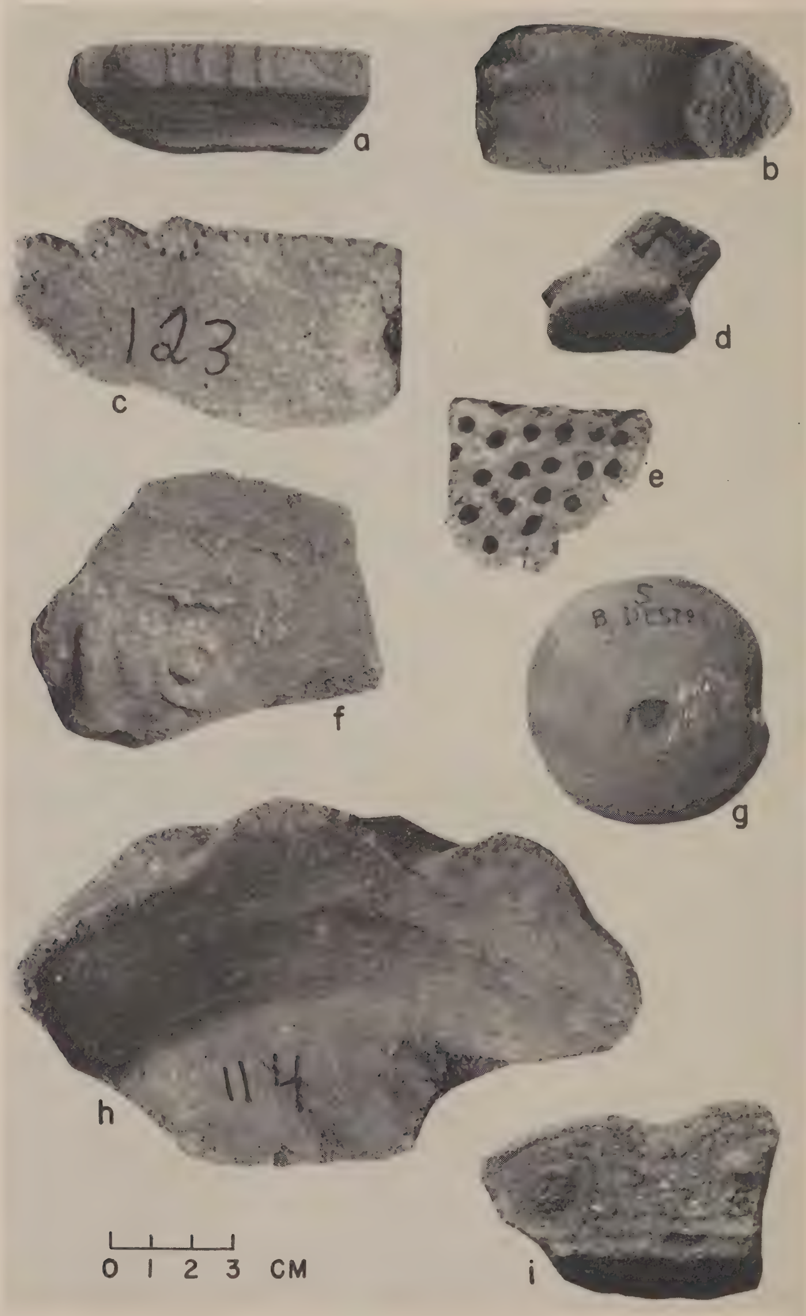
Type sherds of Uxy Incised with rectilinear motifs, Mazagão Phase.



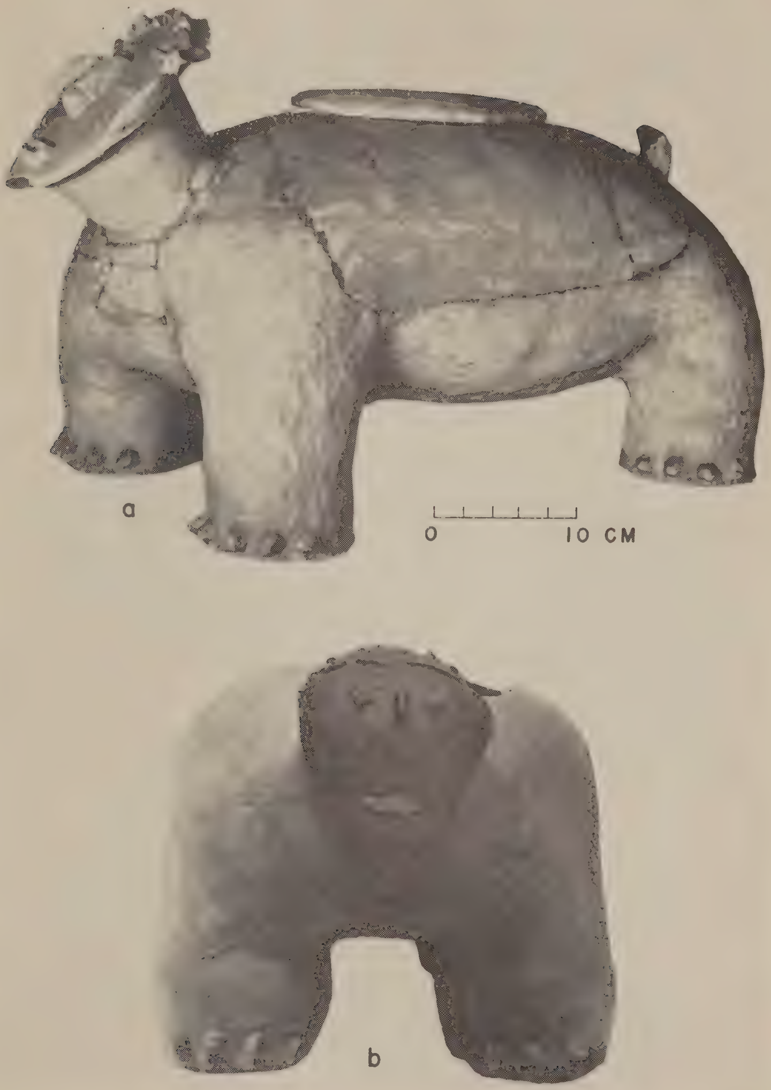
Type sherds of Uxy Incised with curvilinear motifs, Mazagão Phase.



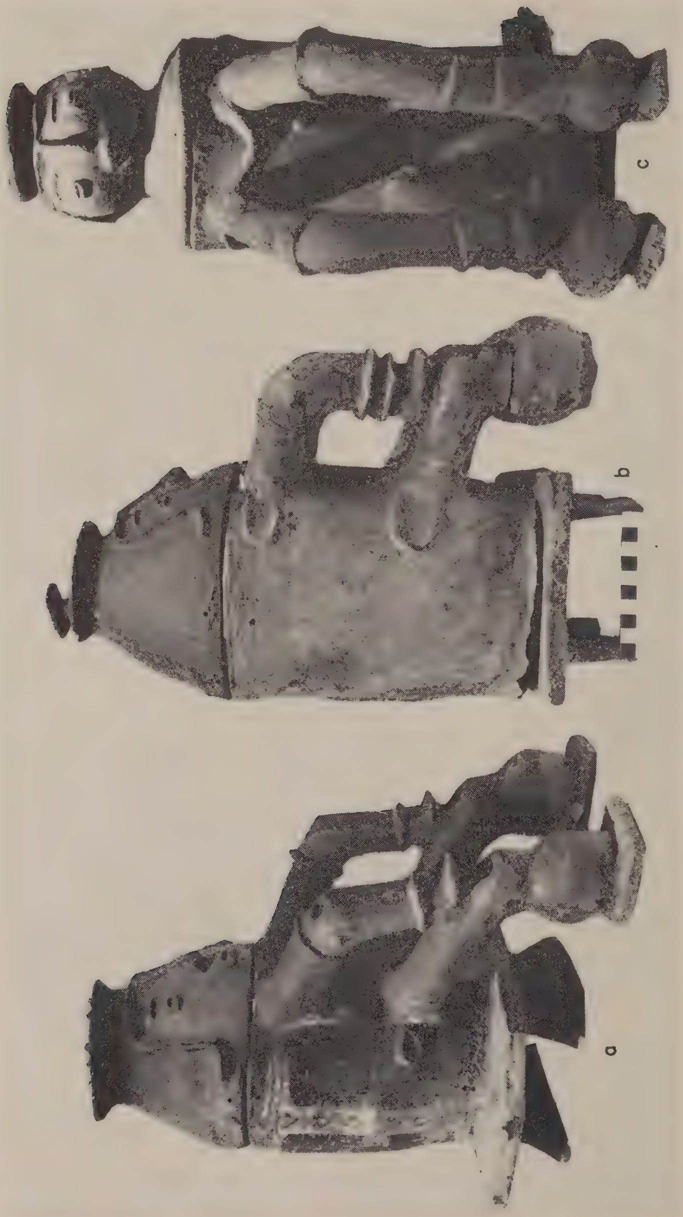
Decorated pottery types of the Mazagão Phase. *a*, Uxy Incised bowl exterior from the site of Uxy, Rio Iratapurú. *b-g*, Type sherds of Jarí Scraped.


a
b
c
123
d
e
f
g
h
114
i
0 1 2 3 CM

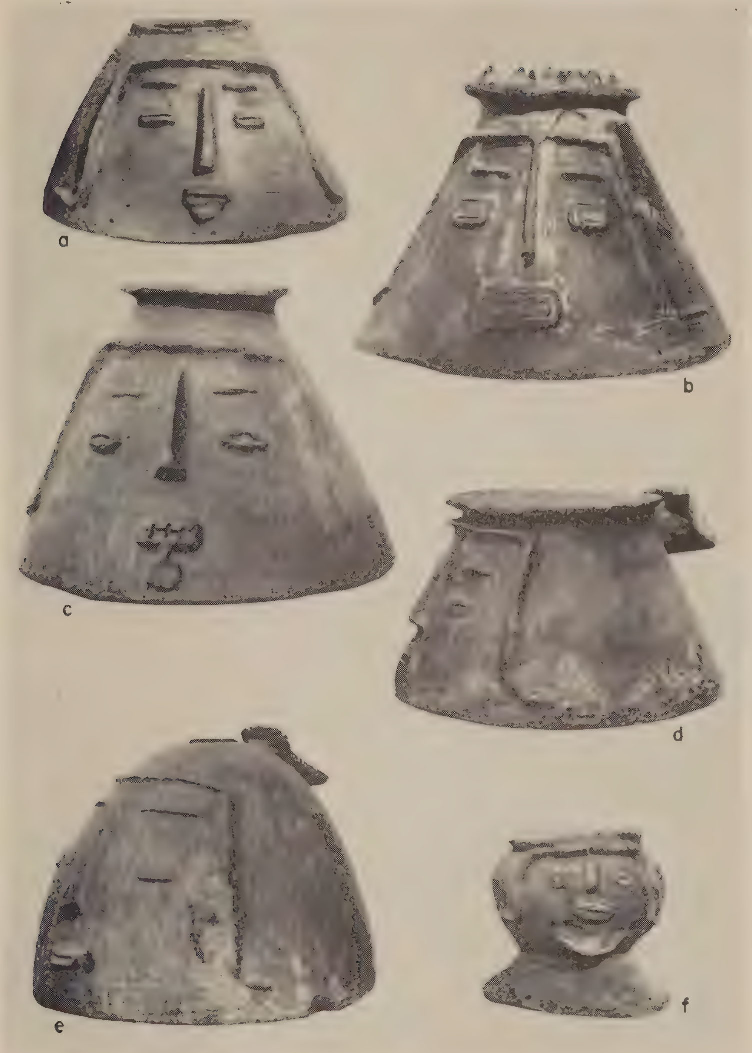
Unclassified decorated sherds from the Mazagão Phase. *a*, *d*, *i*, Modeled and incised. *b*, *f*, *h*, Modeled. *c*, Punctate. *e*, Flat sherd with perforations. *g*, Spindle whorl.



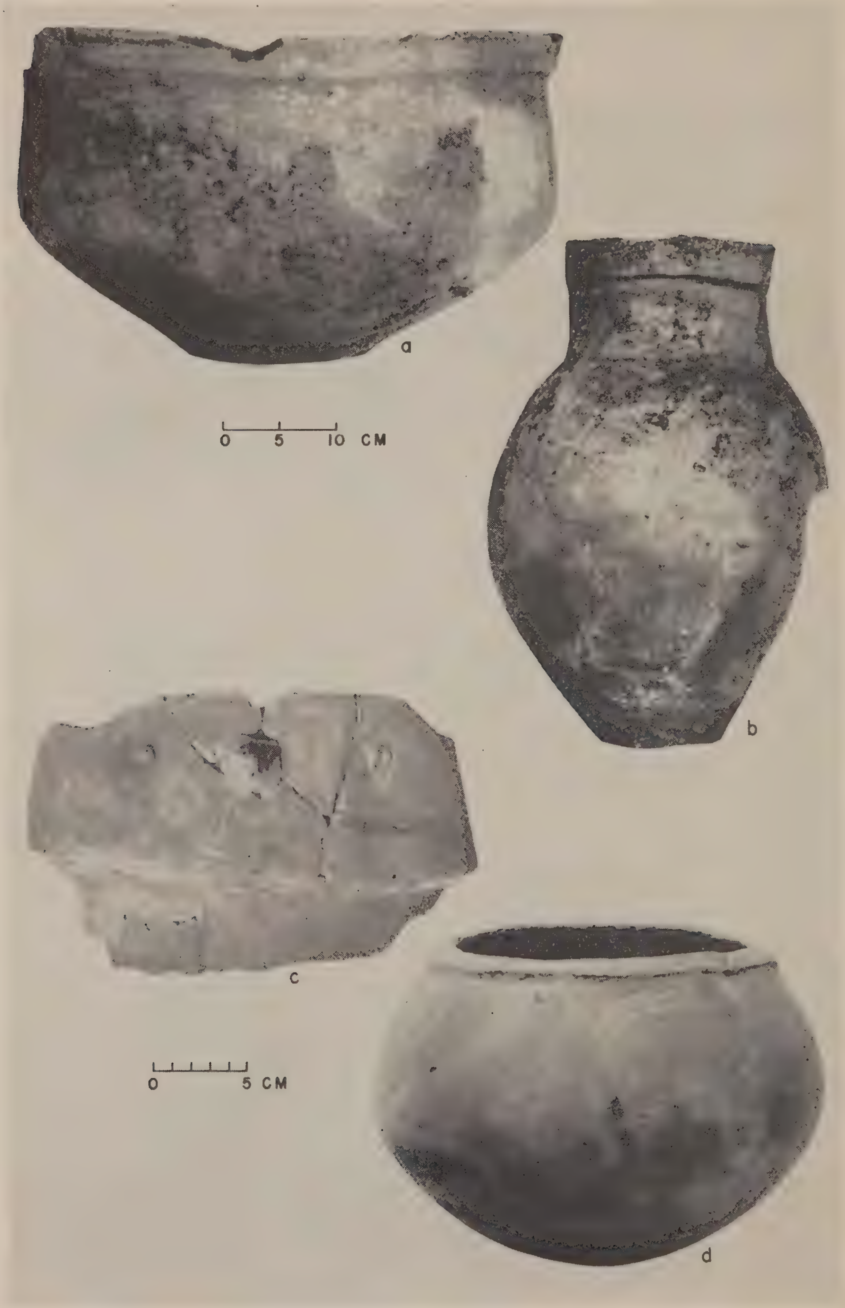
Zoomorphic burial urns of the Maracá Phase from Ilha do Pará. *a*, University Museum, Philadelphia, No. SA 1477, collected by W. C. Farabee. *b*, Museu Paraense Emilio Goeldi, collected by Lima Guedes.



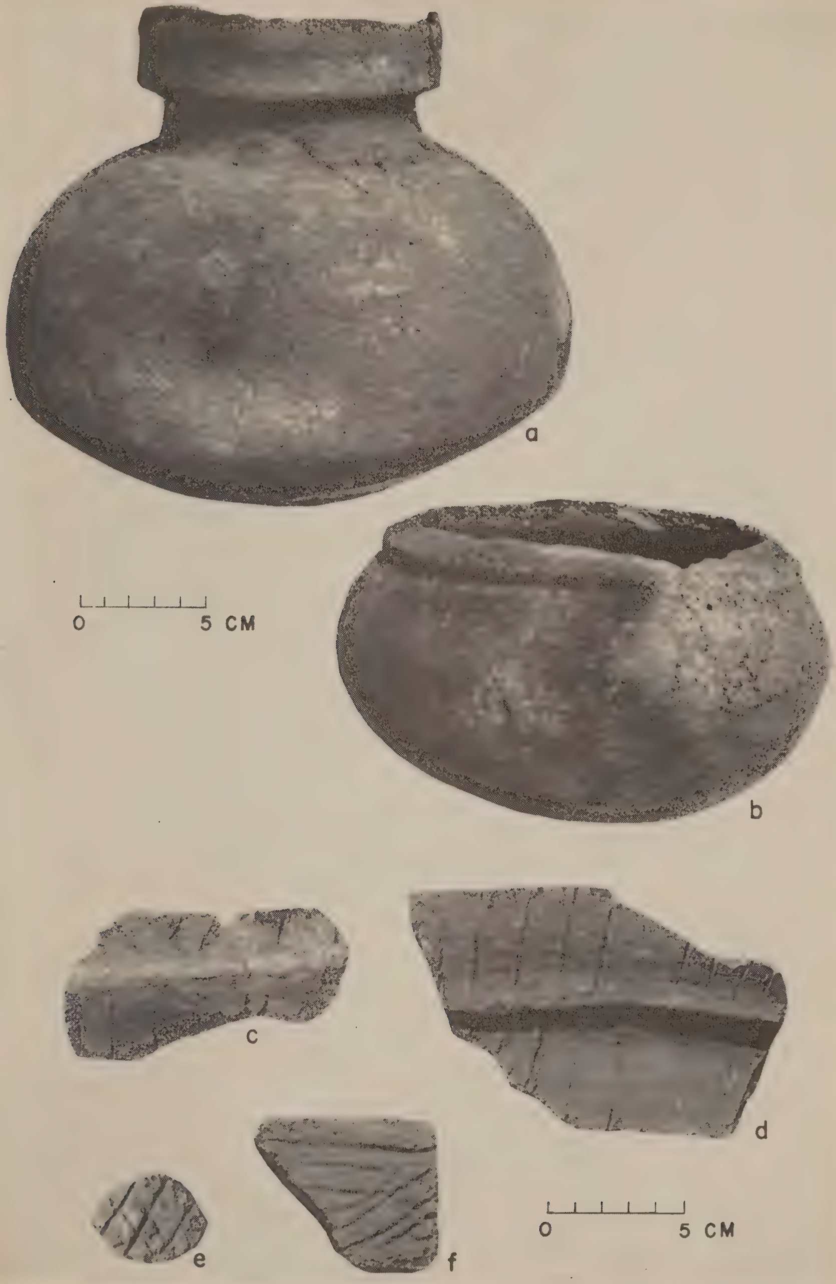
Anthropomorphic burial urns of the Maracá Phase, collected by Lima Guedes from the Rio Maracá and now in the Museu Paraense Emilio Goeldi. *a*, Painted black and white. *b*, Painted black and yellow and decorated on arm and spine with European glass beads. *c*, Plain.



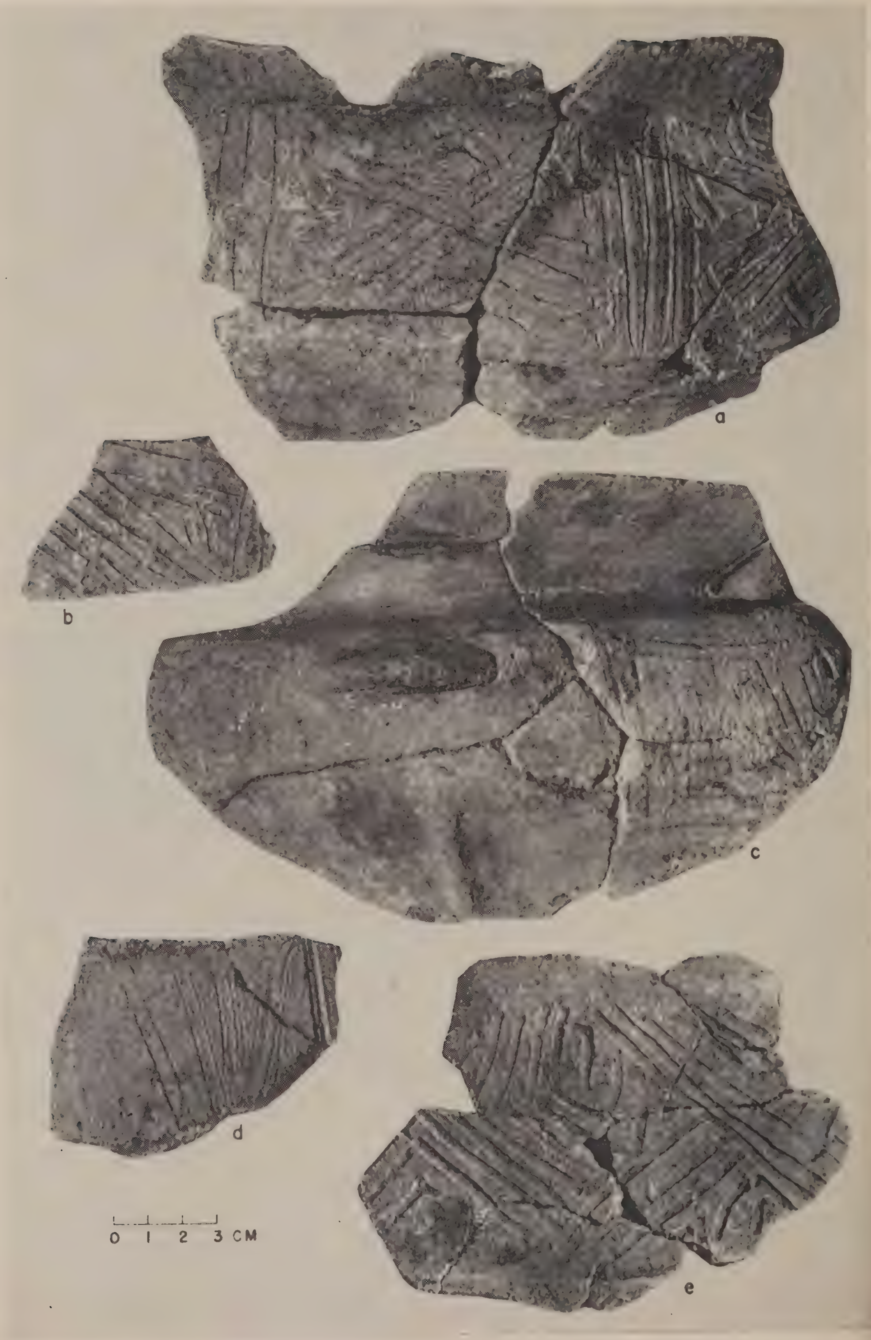
Lid heads of Maracá Phase anthropomorphic burial urns in the collection of the Museu Paraense Emilio Goeldi. *a-d*, Type 1: straight-sided, truncated cone with flat disk top. *e*, Type 2: dome-shaped. *f*, Type 3: rounded with flat top and constricted neck, with shoulders widening out to the diameter of the jar mouth.



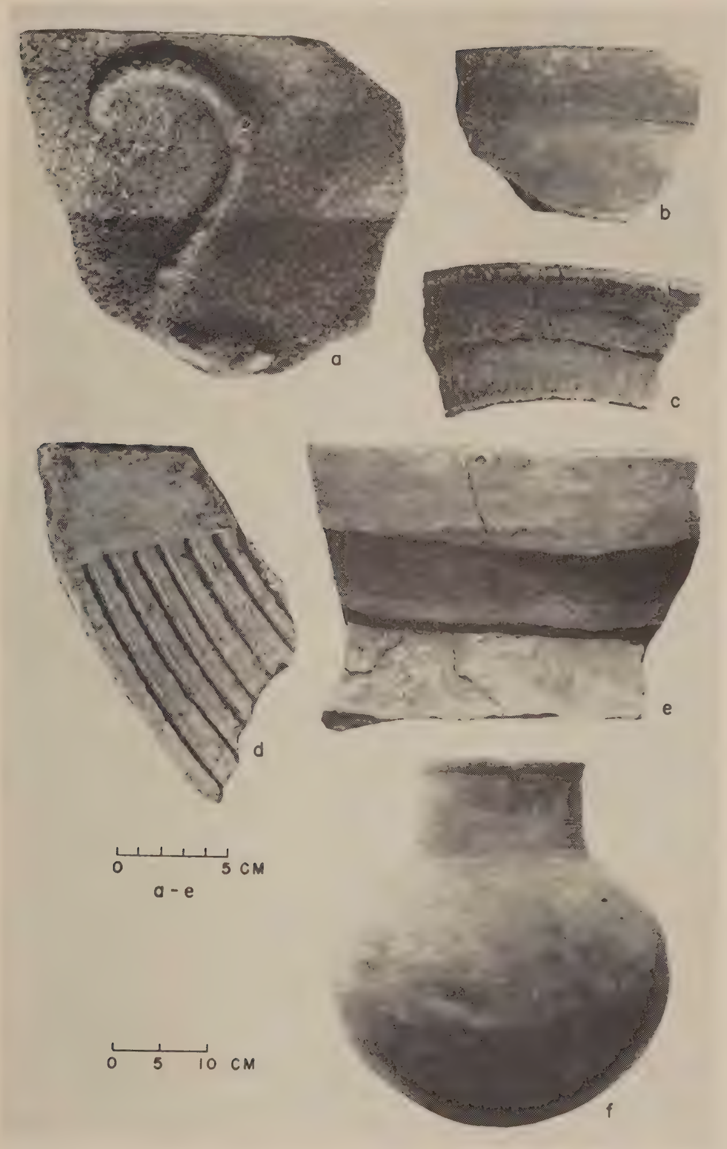
Aristé Plain burial vessels from A–11—Montanha de Aristé. *a*, Cave 2, vessel N. *b*, Cave 2, vessel B. *c*, Cave 1. *d*, Cave 2, vessel D.



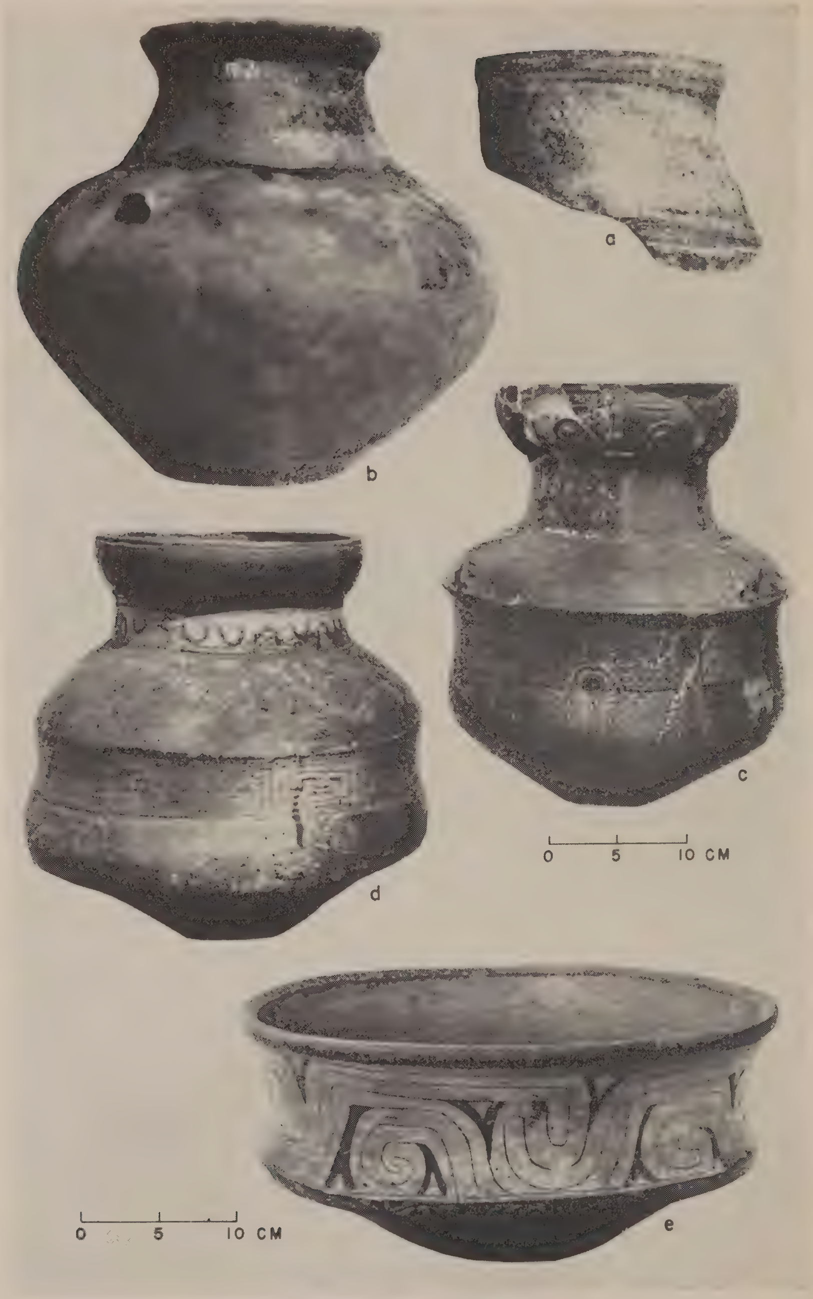
Decorated pottery types of the Aristé Phase. *a*, Aristé Painted; A–11, Cave 2, vessel I. *b*, Aristé Painted; A–11, Cave 2, vessel L. *c*–f, Type sherds of Daví Incised.



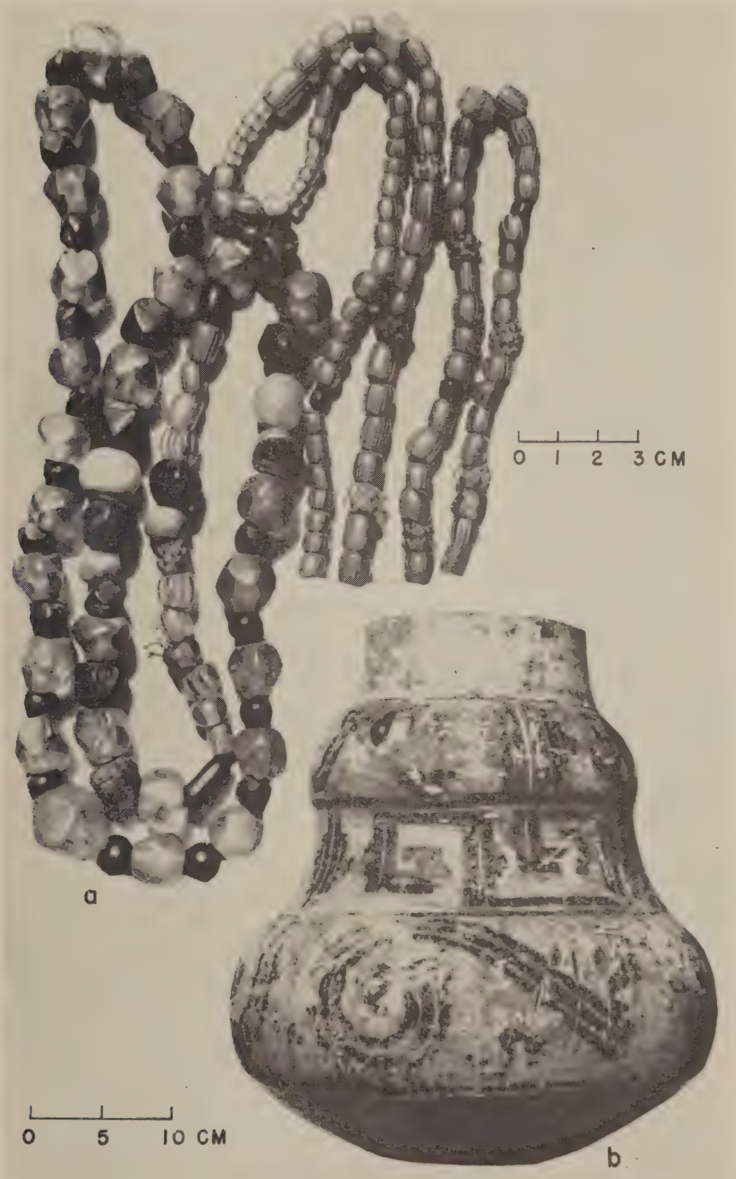
Fragmentary vessels of Flexal Scraped from the Aristé Phase cemetery of A-11—Montanha de Aristé, Cave 2.



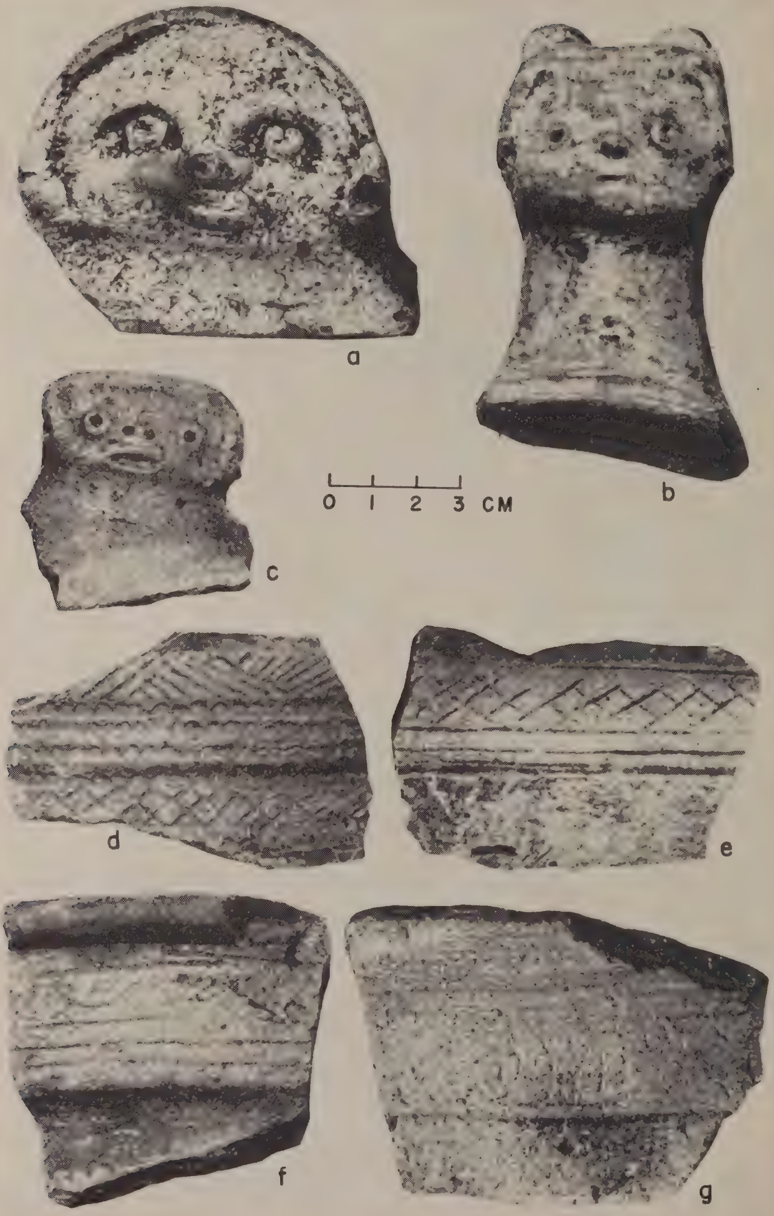
Type sherds and a complete vessel of Serra Plain from Aristé Phase sites. *a*, Jar rim with simple appliqué decoration. *b*, *c*, *e*, Jar rims with slight exterior thickening. *d*, Bowl with deeply grooved interior, possibly used as a grater. *f*, Vessel 10 from Cunaní site, excavated by Goeldi and now in the Museu Paraense Emilio Goeldi.



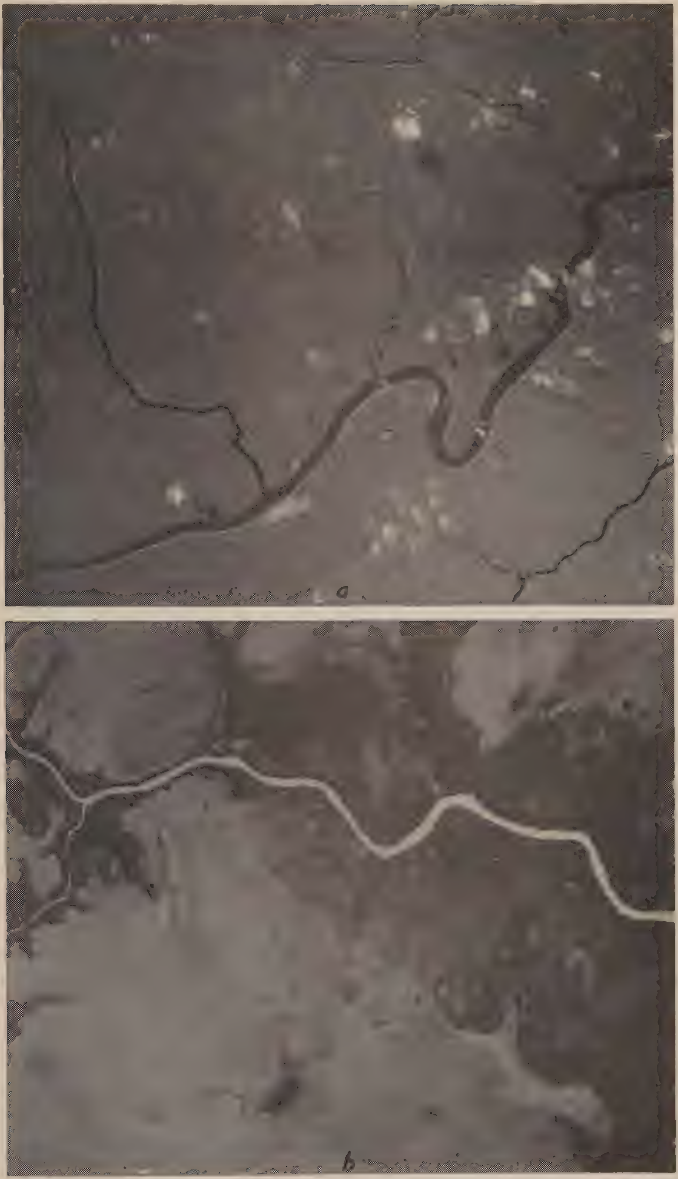
Vessels of Serra Painted from cemetery sites of the Aristé Phase. *a*, A–11, Cave 2, jar neck with painted bands. *b*, A–11, Cave 2, vessel K, painted red. *c*, Cunaní Site, vessel 15, Museu Paraense Emilio Goeldi. *d*, Cunaní Site, vessel 14, Museu Paraense Emilio Goeldi. *e*, Cunaní Site, vessel 8, Museu Paraense Emilio Goeldi.


0 1 2 3 CM
a
0 5 10 CM
b

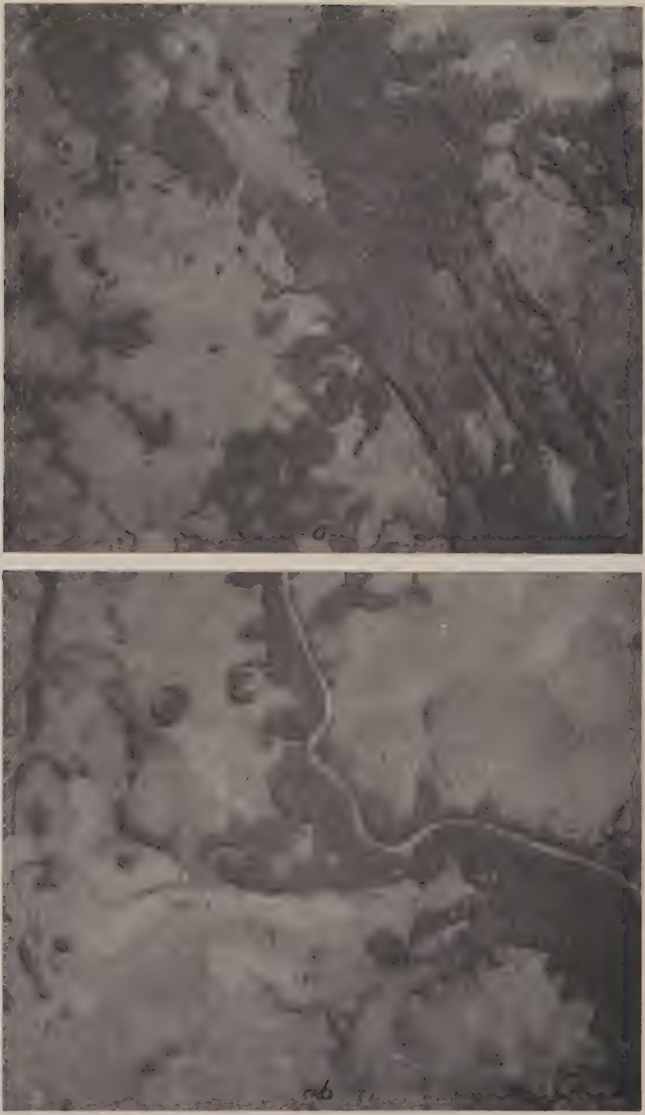
Serra Painted jar from A–15—Vila Velha and a sample of the glass trade beads found inside.



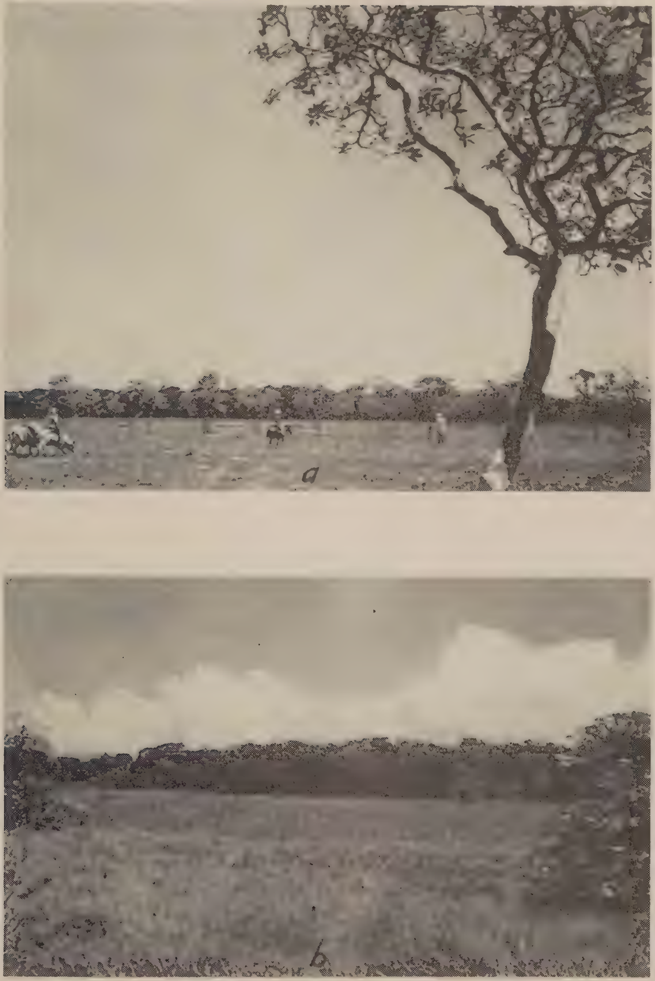
Pottery types from the Aristé Phase. *a–b*, Serra Painted figurines and adornos from A–16—Ilhas do Campo. *c*, Serra Plain figurine or adorno from A–16. *d–g*, Type sherds of Uaçá Incised.



Aerial views of Marajó Island. *a*, Forested western part with numerous rivers and streams. *b*, Vegetation pattern of southeastern Marajó with modern garden clearings visible in the forest bordering the river. (Courtesy United States Army Air Force.)

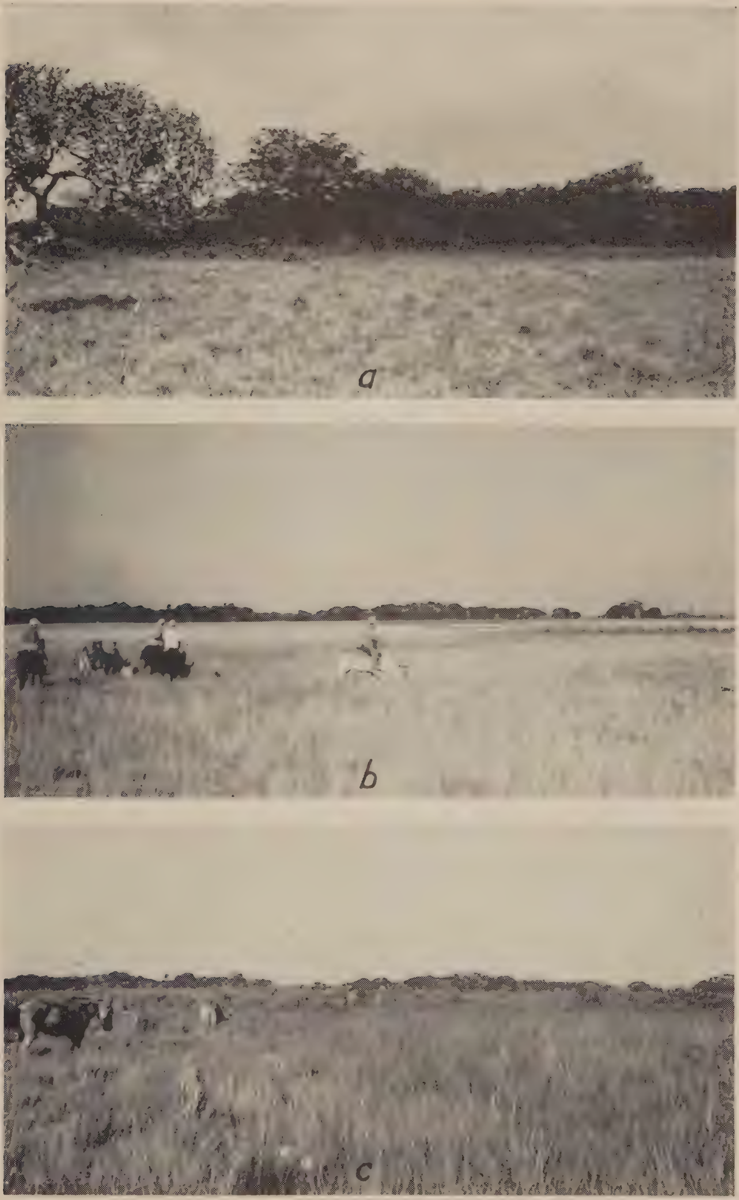


Aerial views of Marajó Island: *a*, Alternation between forest and *campo* typical of the region west of Lago Arari. *b*, Open *campo* with trees in small isolated clumps and fringing the rivers, typical of eastern Marajó. (Courtesy United States Air Force.)

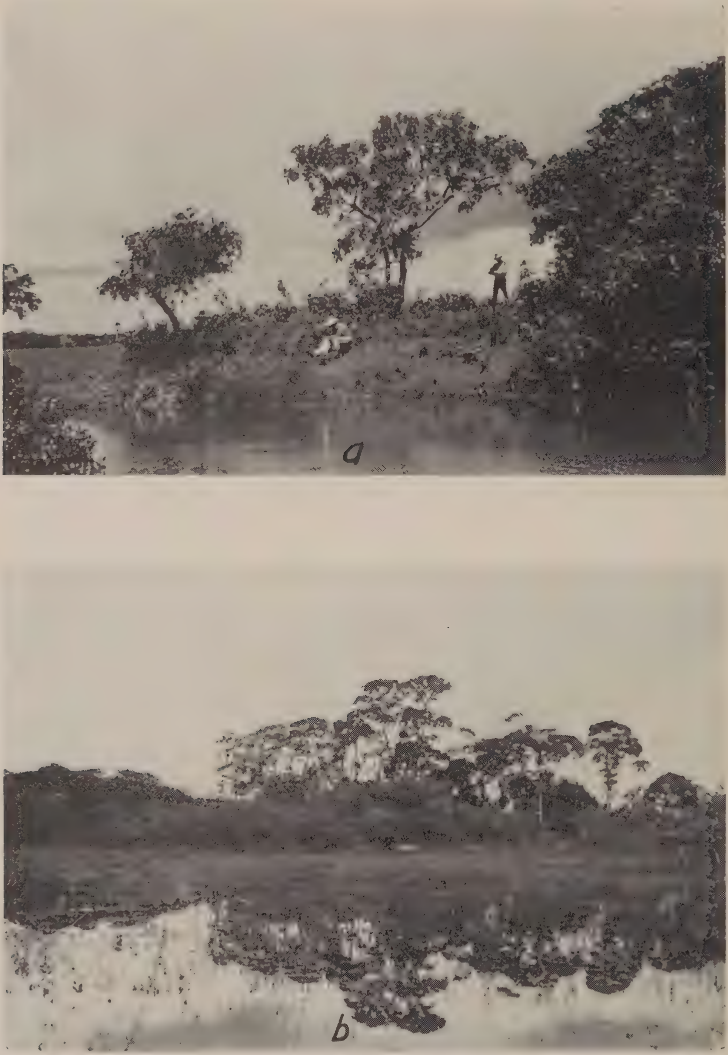


Typical environment on northern Marajó. *a*, *Campo* sprinkled with trees in the vicinity of J–7—Sipó. *b*, Forest and *campo* in the vicinity of J–9—Ananatuba and J–10—Sororoco.

Habitation sites of the Tropical Forest archeological Phases on Marajó Island: *a*, J–7—Sipó, Ananatuba Phase. *b*, J–13—Bacurí, Mangueiras Phase.

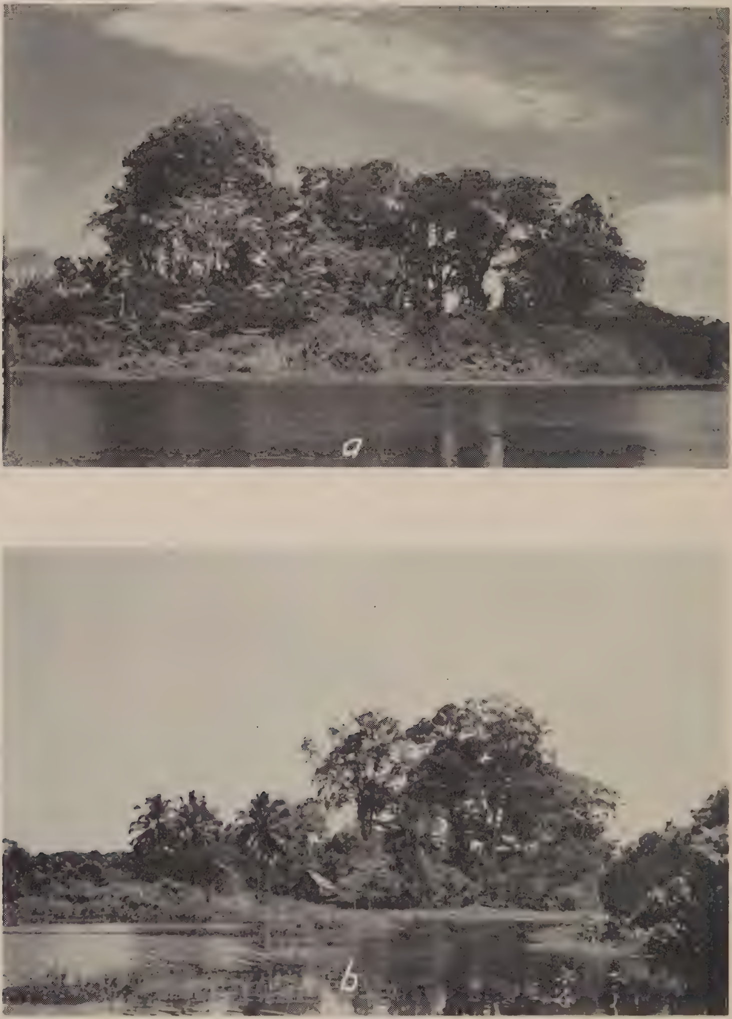


Formiga Phase sites in the *campo* of northern Marajó: *a*, J–4—Mucajá, visible as a darker band in the grass at the right. *b*, J–6—Formiga with the mounds appearing as bands of darker growth at the right. *c*, J–6—Formiga, Mound 1 during excavation.

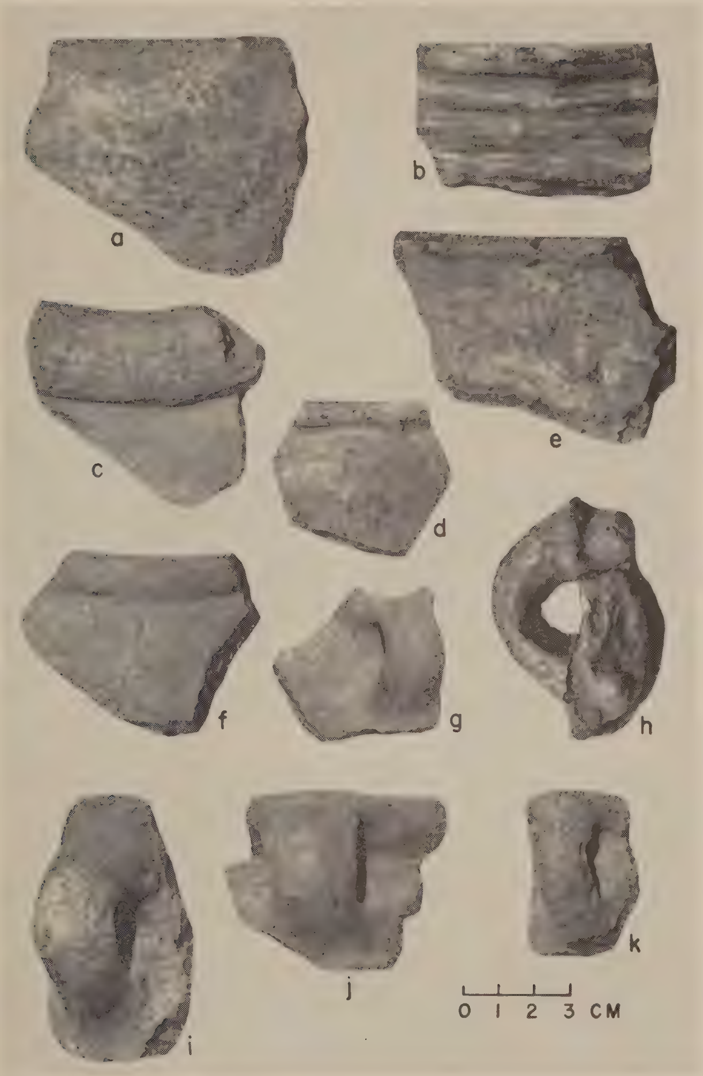


Marajoara Phase habitation mounds on the Igarapé Camutins, central Marajó: *a*, J–15, Mound 11 from midstream at the end of the rainy season. *b*, J–15, Mound 14 with flooded *campo* in the foreground.

Marajoara Phase cemetery mounds on the Igarapé Camutins, central Marajó: *a*, J–15, Mound 1, Camutins from upstream at high water. *b*, J–15, Mound 17, Belém from downstream at high water. The south end of the mound has been cleared by a *caboclo* for his house.



Marajoara Phase cemetery mounds on the upper Rio Anajás, central Marajó: *a*, J–14, Mound 1, Guajará from midstream at the end of the rainy season. *b*, J–14, Mound 2, Monte Carmelo from the flooded river bank.


a
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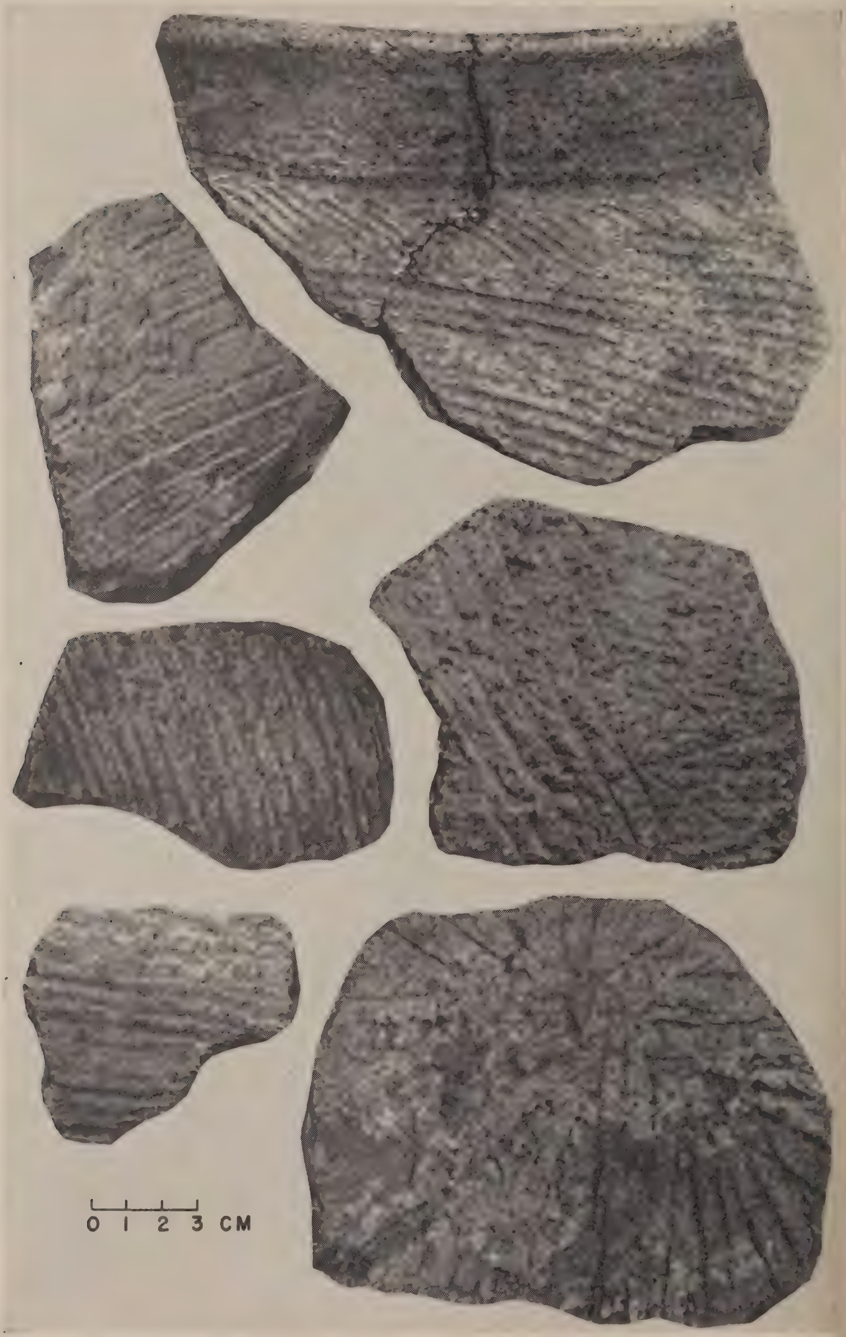
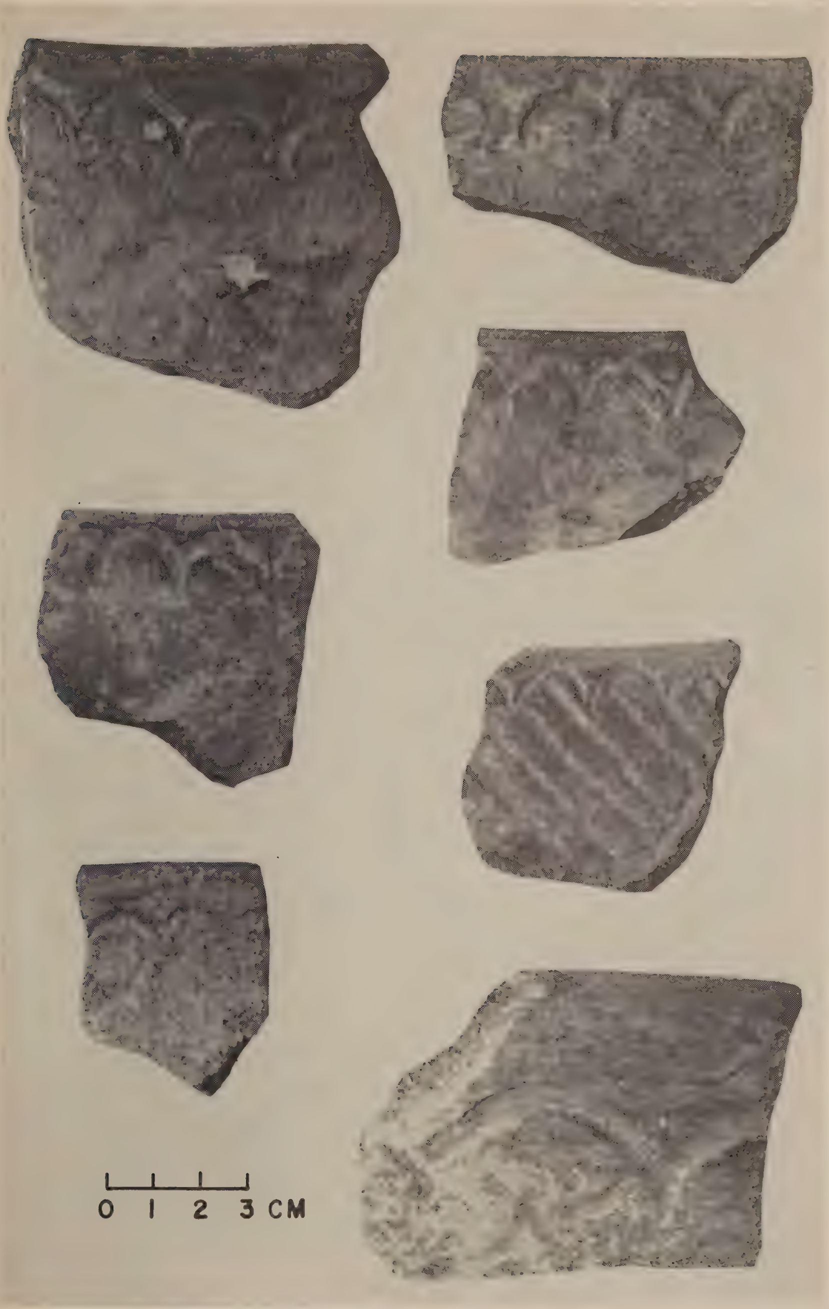
i
j
k
0 1 2 3 CM

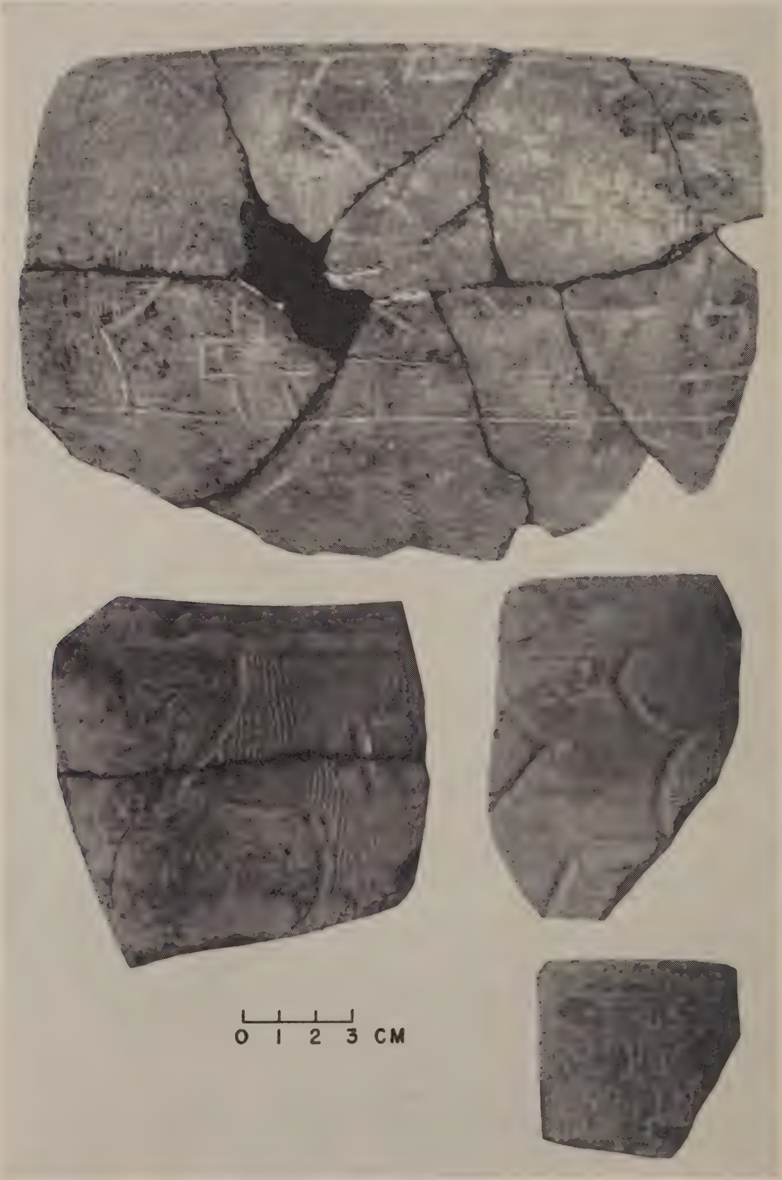
Type sherds of Ananatuba Plain showing rim variation and handle construction, Ananatuba Phase.



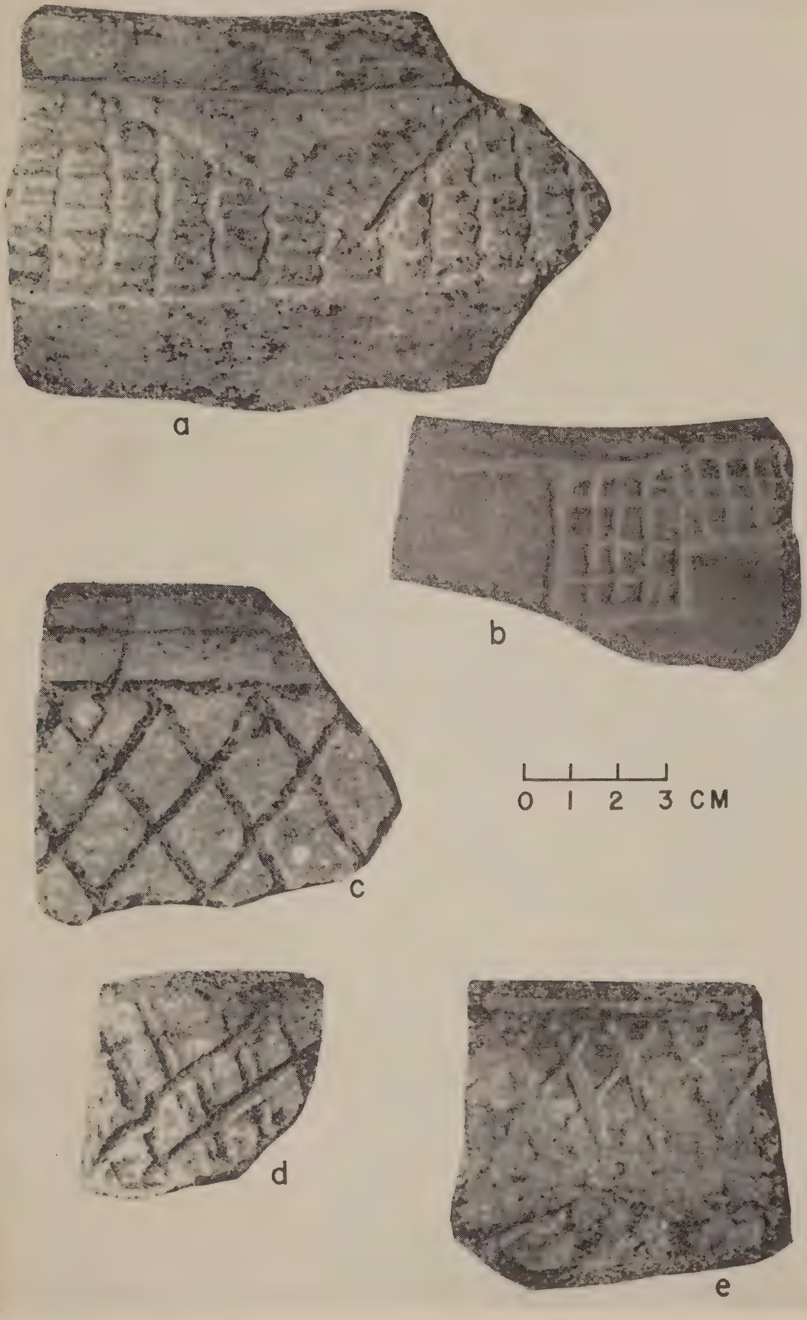
Type sherds of Carmo Brushed, Ananatuba Phase.



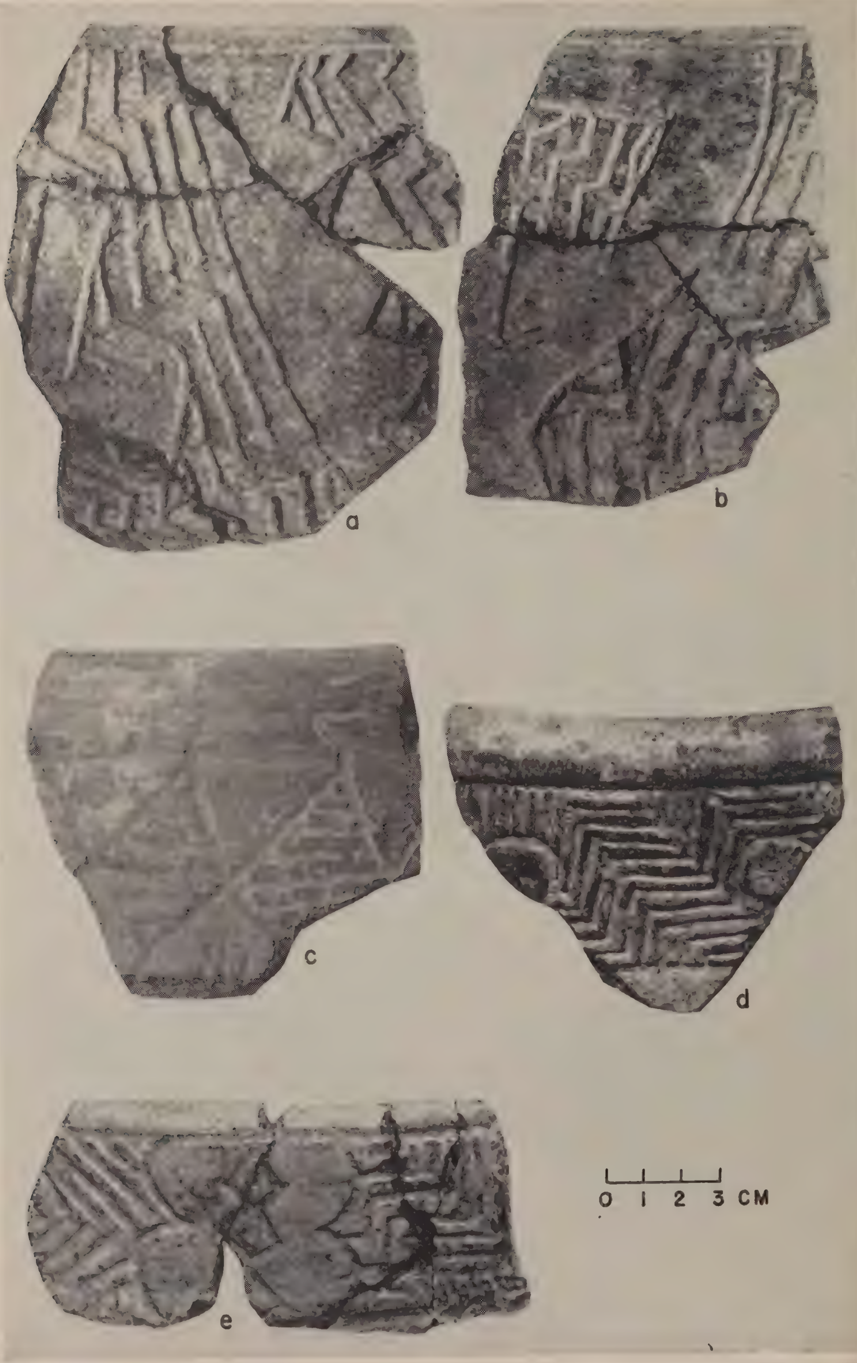
Type sherds of Sipó Incised, Design Type 1: row of scallops, Ananatuba Phase.



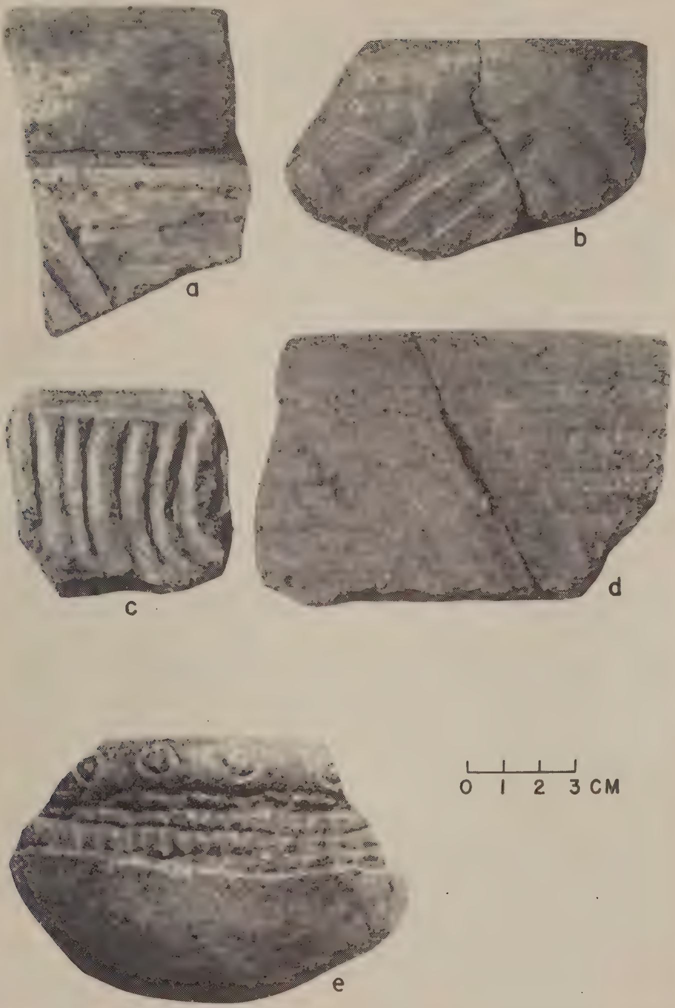
Type sherds of Sipó Incised, Design Type 2: zoned, fine crosshatch, Ananatuba Phase.



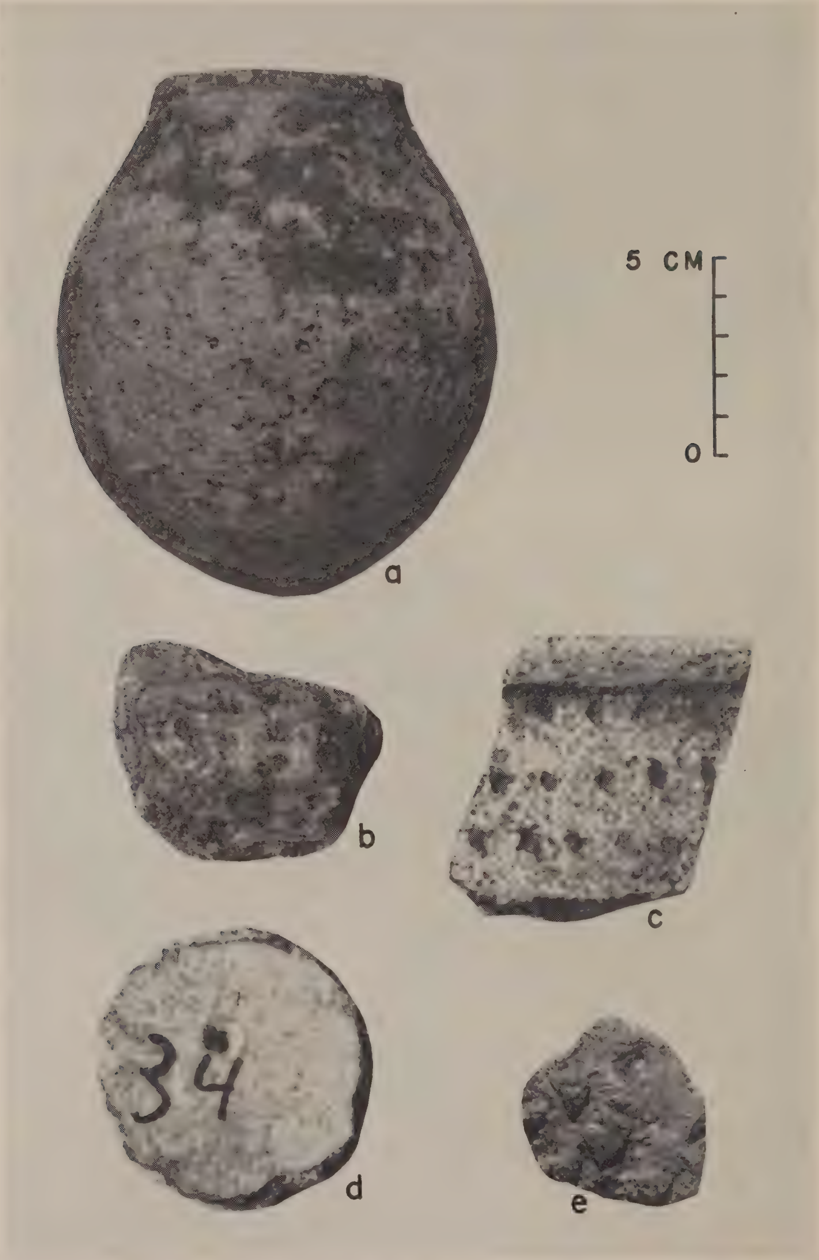
Type sherds of Sipó Incised. Ananatuba Phase. *a–b*, Design Type 3: zoned, large crosshatch. *c–e*, Design Type 4: diagonal crosshatch.



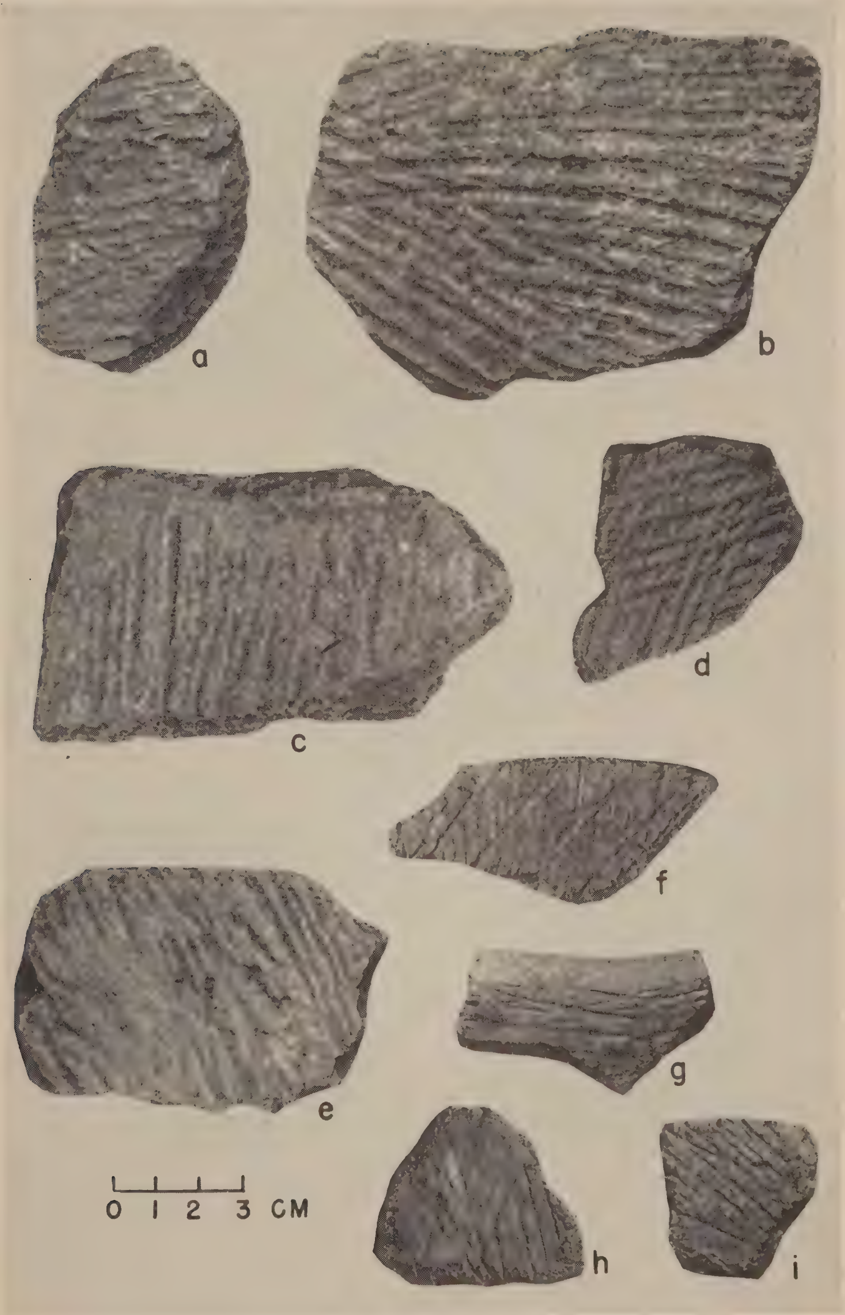
Type sherds of Sipó Incised Design Type 5: zoned, parallel lines, Ananatuba Phase.



Type sherds of Sipó Incised, Ananatuba Phase. *a–d*, Design Type 6: broad, parallel lines or grooves. *e*, Design Type 7: circles along rim.



Miscellaneous pottery from Ananatuba Phase sites. *a,* Miniature Ananatuba Plain jar from J–10—Sororoco. *b-c,* Unclassified decorated sherds with punctate ornamentation, from J–7—Sipó and J–9—Ananatuba. *d,* Worked and partially drilled sherd, possibly a spindle whorl from J–7—Sipó. *e,* Unclassified decorated sherd with pinched surface resembling corrugation from J–8—Maguarí.


a
b
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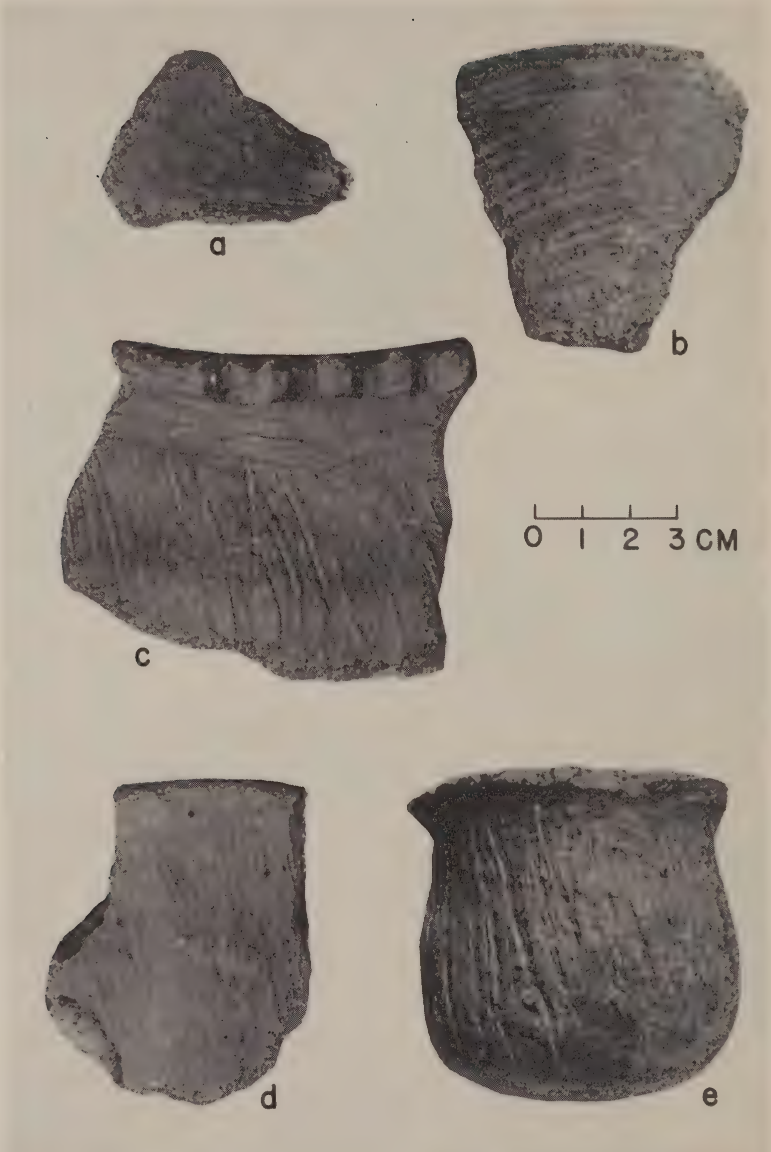
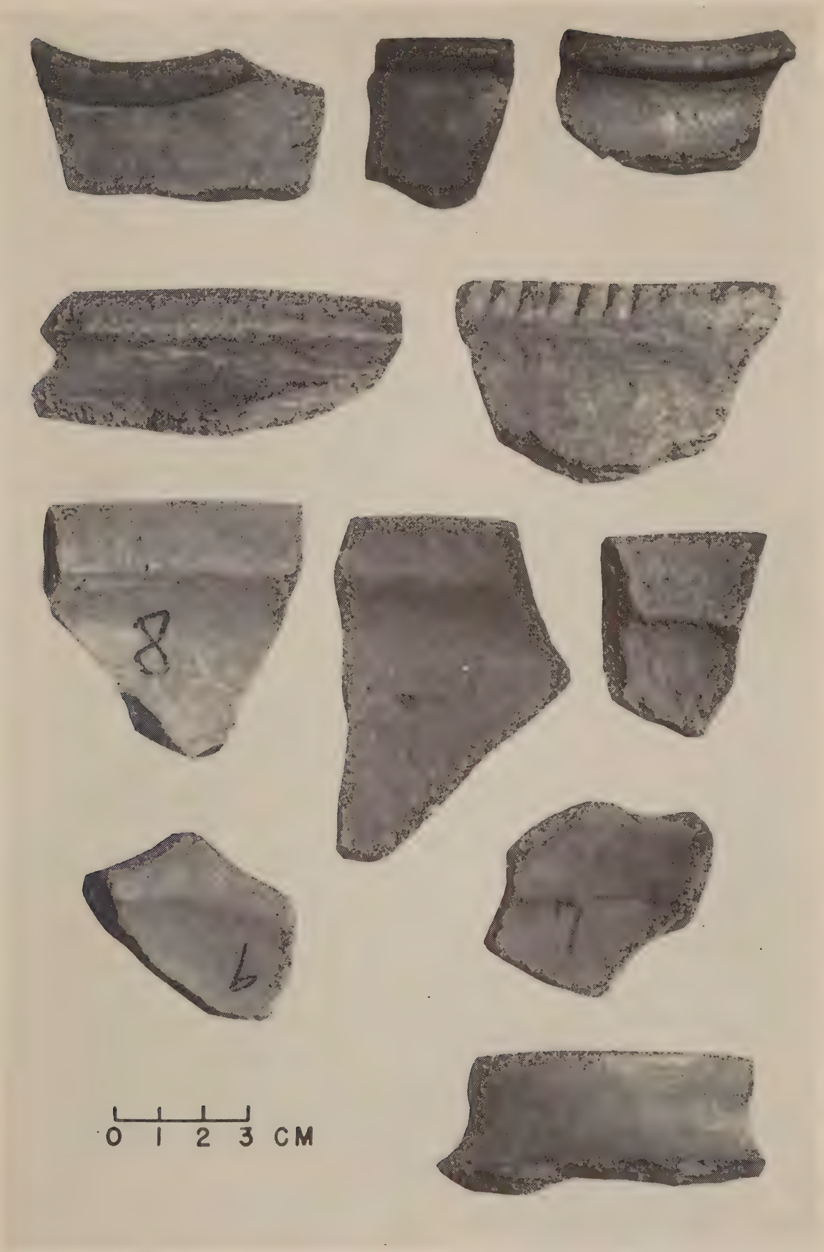
g
0 1 2 3 CM
h
i

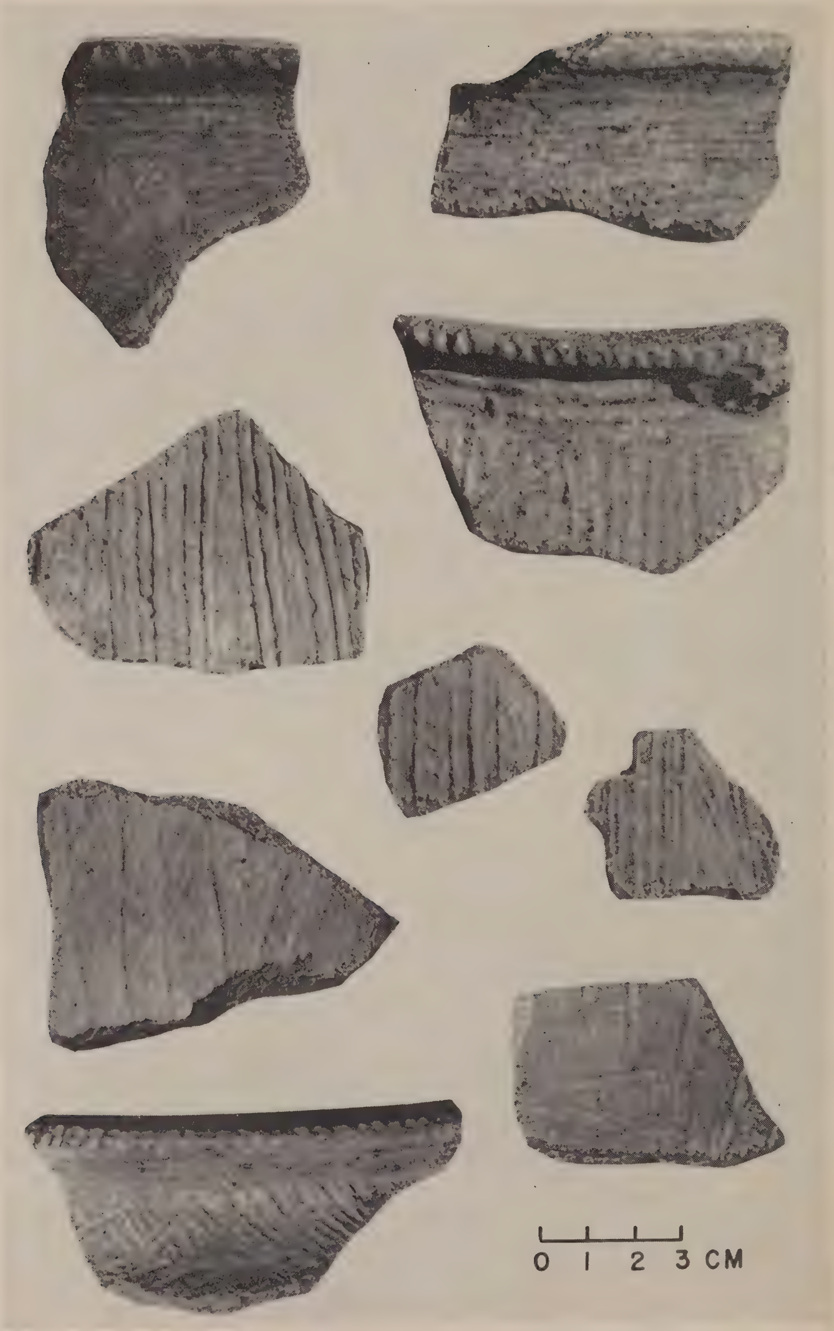
Type sherds of Bacurí Brushed, Mangueiras Phase.



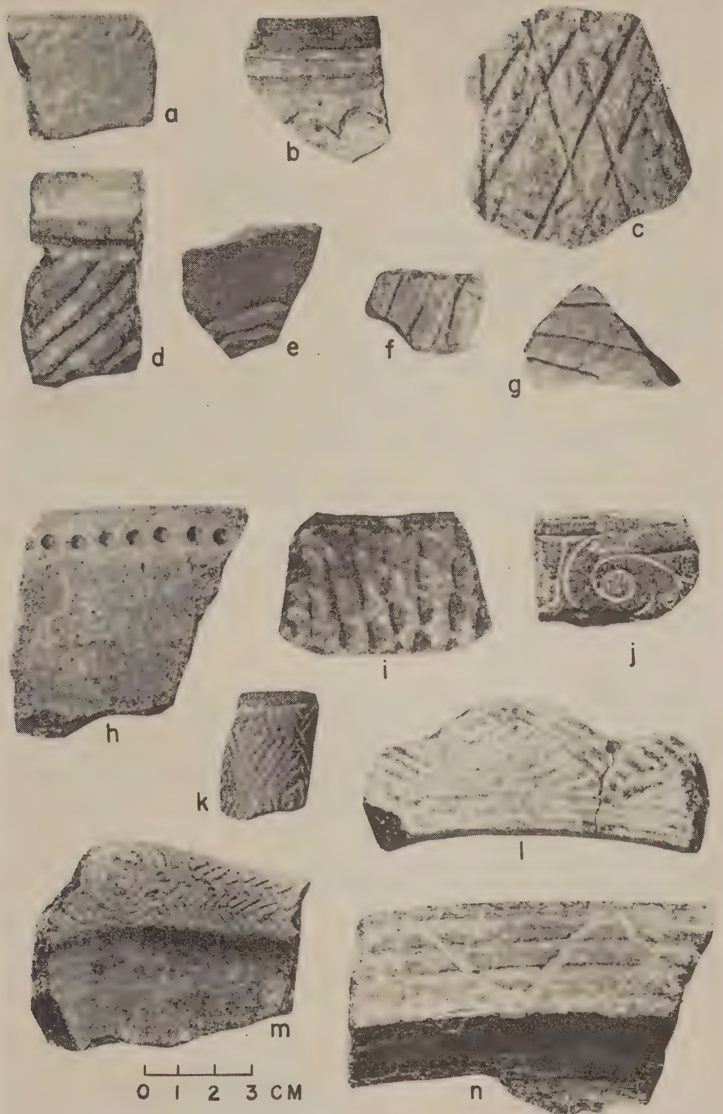
Type sherds and miniature vessel of Croarí Brushed, Mangueiras Phase.



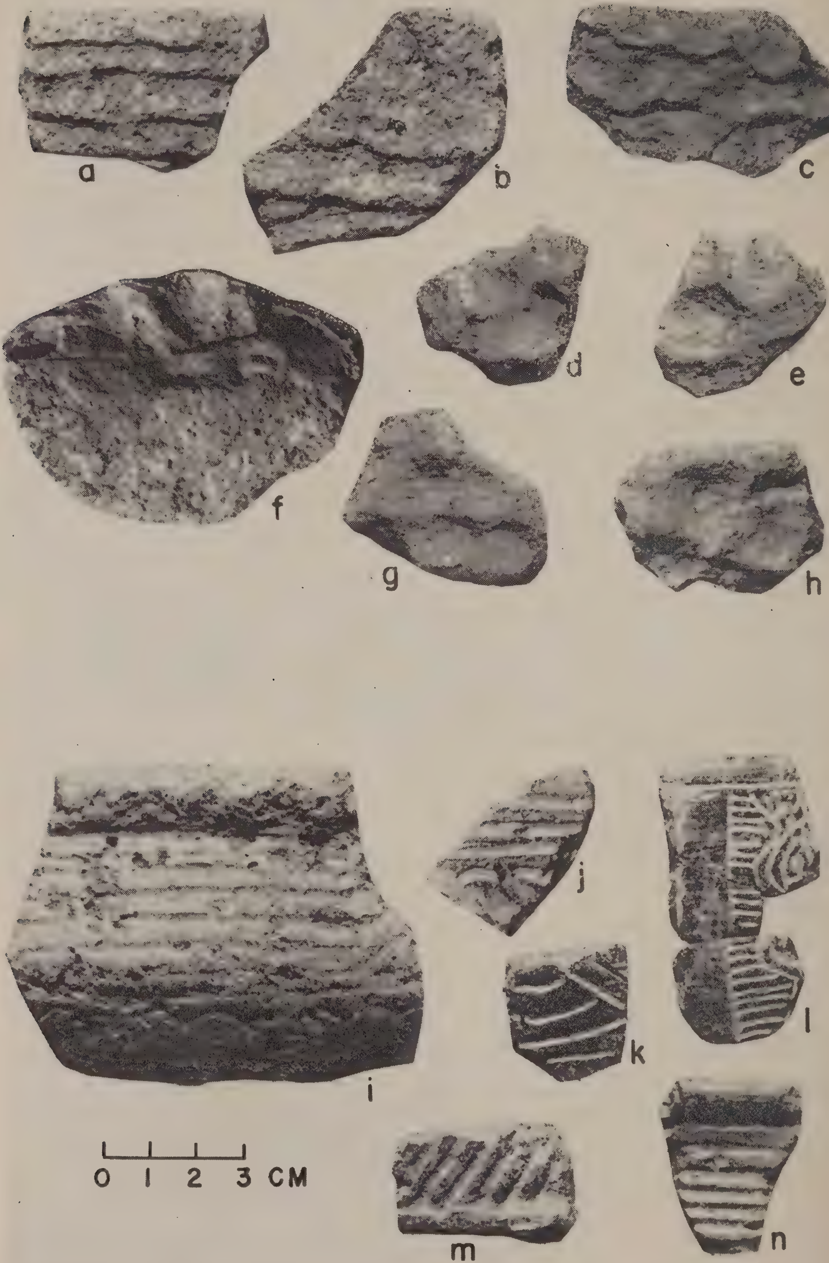
Rim sherds from vessels of Mangueiras Plain, showing rim form and occasional notched or lobed decoration.



Type sherds of Pocoató Scraped, Mangueiras Phase.



Decorated sherds from the Mangueiras Phase. *a–g,* Pseudo-Sipó Incised. *h–i,* Unclassified decorated with punctate ornamentation. *j–n,* Unclassified decorated with incised designs.


a
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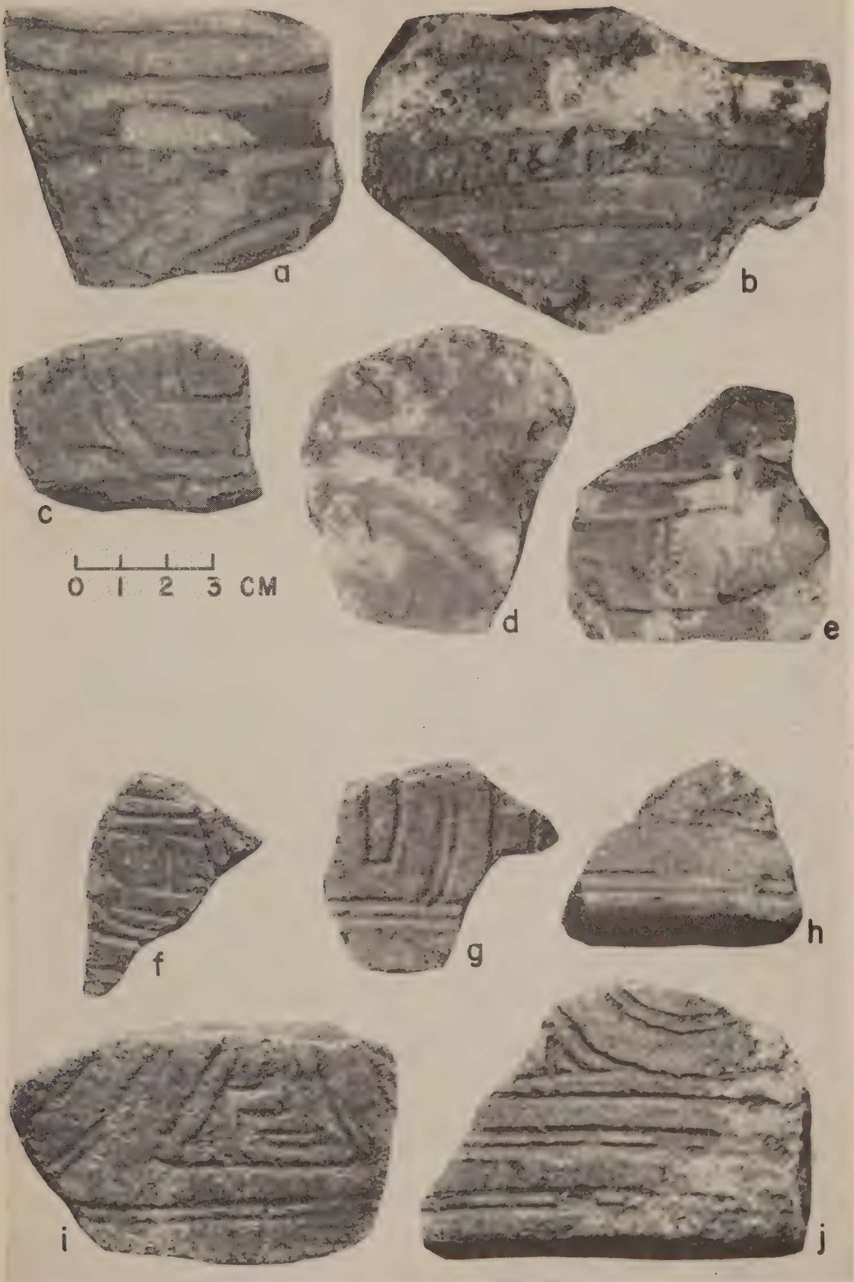
Decorated pottery types of the Formiga Phase. *a–h*, Type sherds of Mucajá Corrugated. *i–n*, Type sherds of Pseudo-Sipó Incised.


a
b
c
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0 1 2 3 CM
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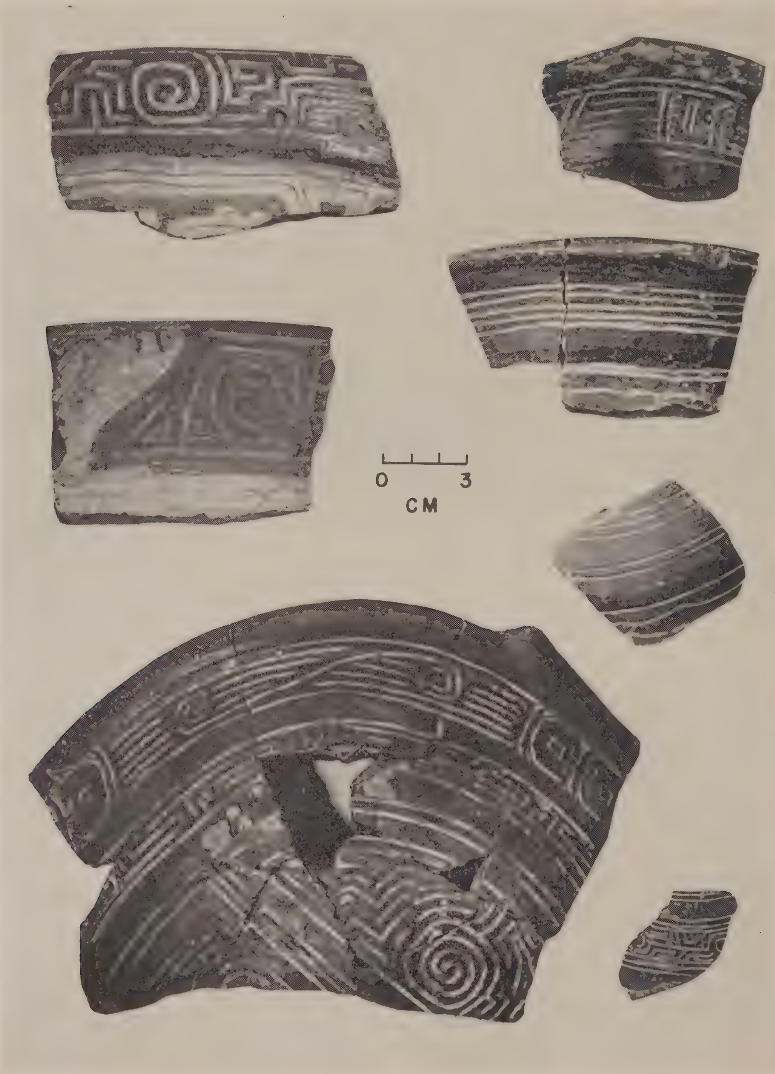
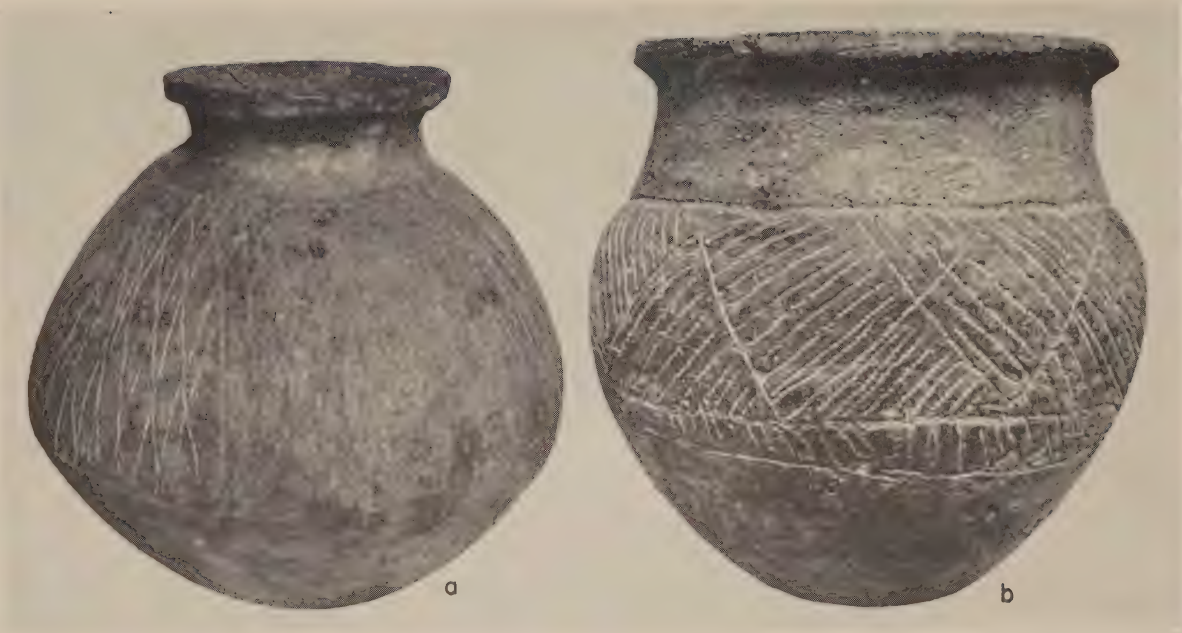
j

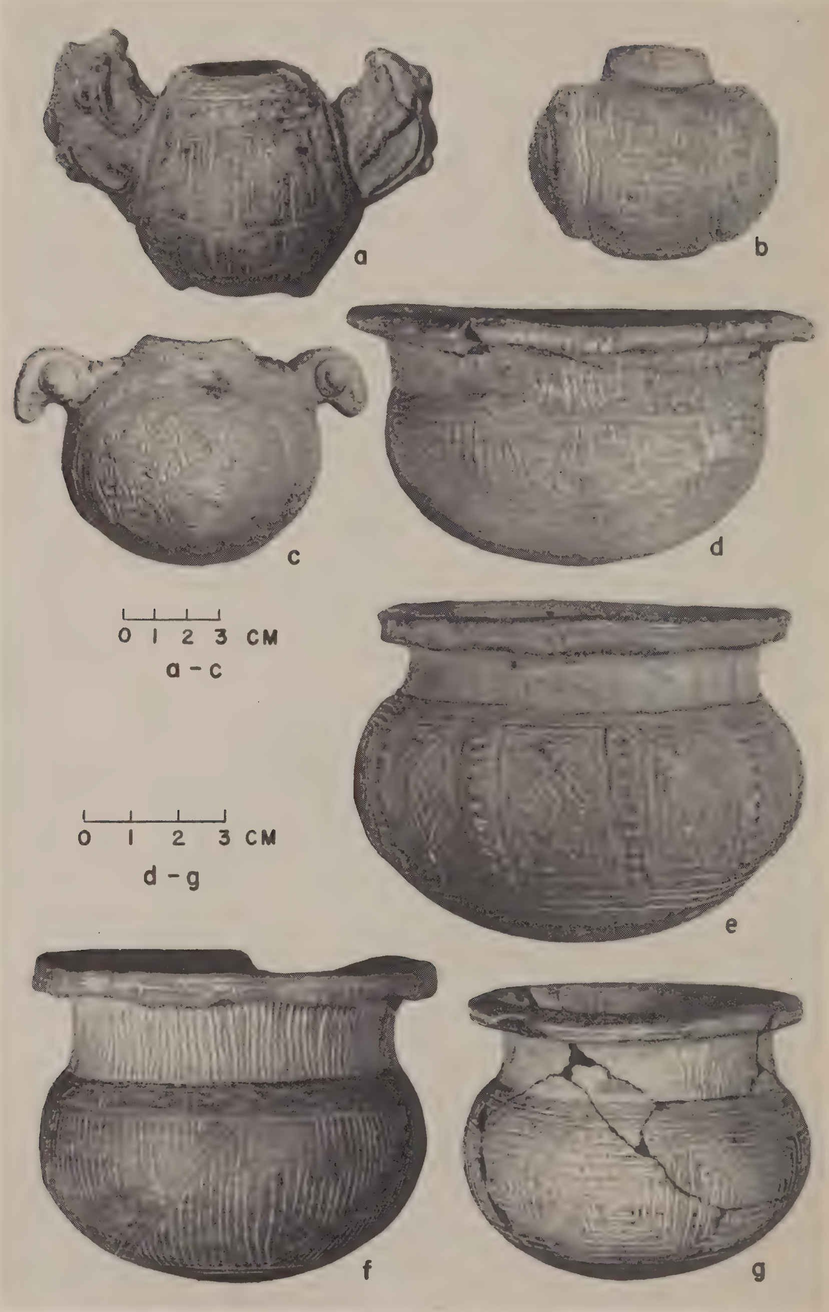
Trade sherds of the Marajoara Phase excavated at the Formiga Phase site of J–6—Formiga: *a–e*, Arari Excised. *f–j*, Guajará Incised.



Type sherds of Anajás Double-slipped Incised, Marajoara Phase. (American Museum of Natural History.)



Vessels of Anajás Plain Incised, Marajoara Phase: *a*, J–14, Mound 2; height 30 cm.; property of Armando Teixeira, Belém. *b*, Rio Anajás area; height 34 cm.; property of J. L. Mindello, Belém.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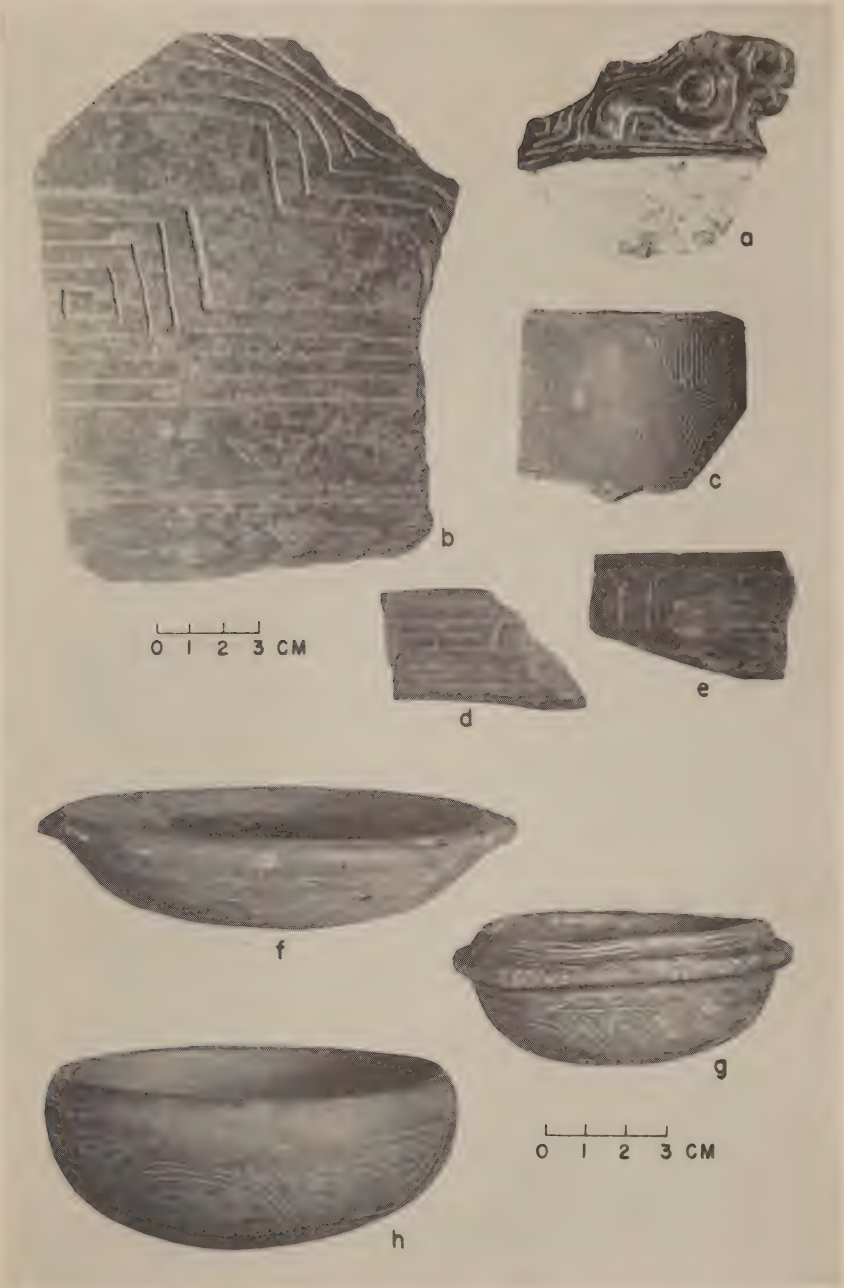
Vessels of Anajás Plain Incised, Marajoara Phase. (American Museum of Natural History.)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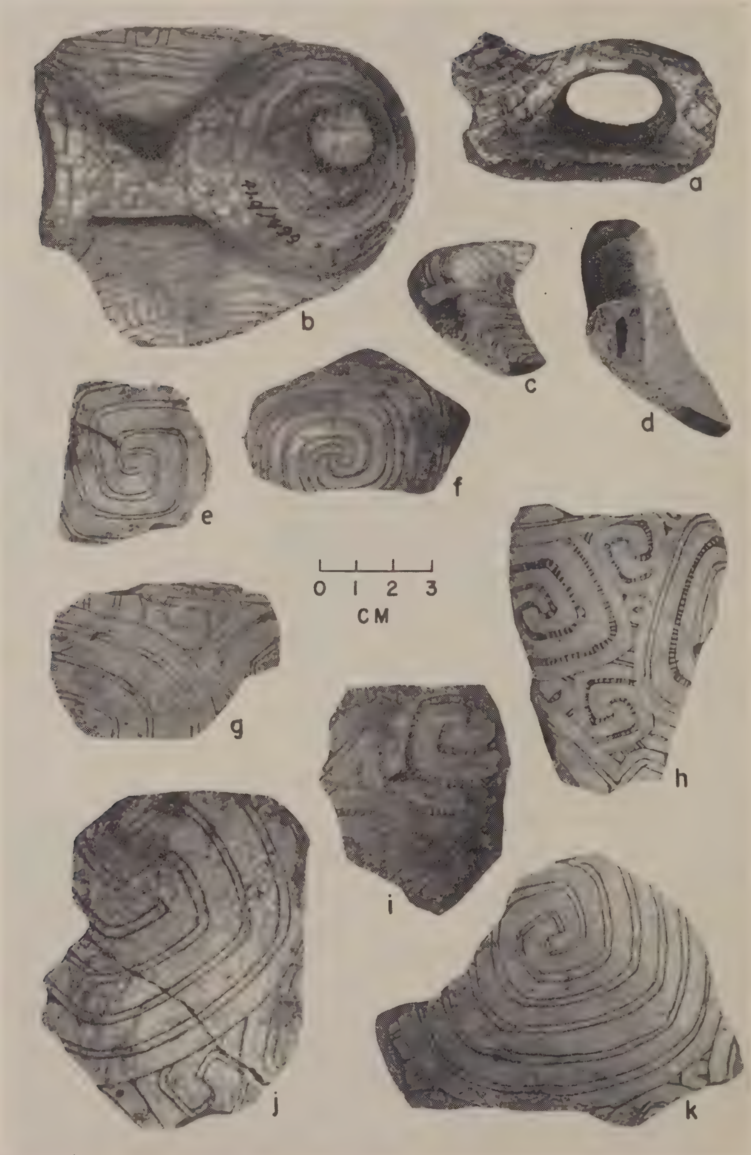
Type sherds and vessels of Anajás Red Incised, Marajoara Phase: *a*, J–15, Mound 14. *b*, University of Michigan Museum. *c–h*, American Museum of Natural History.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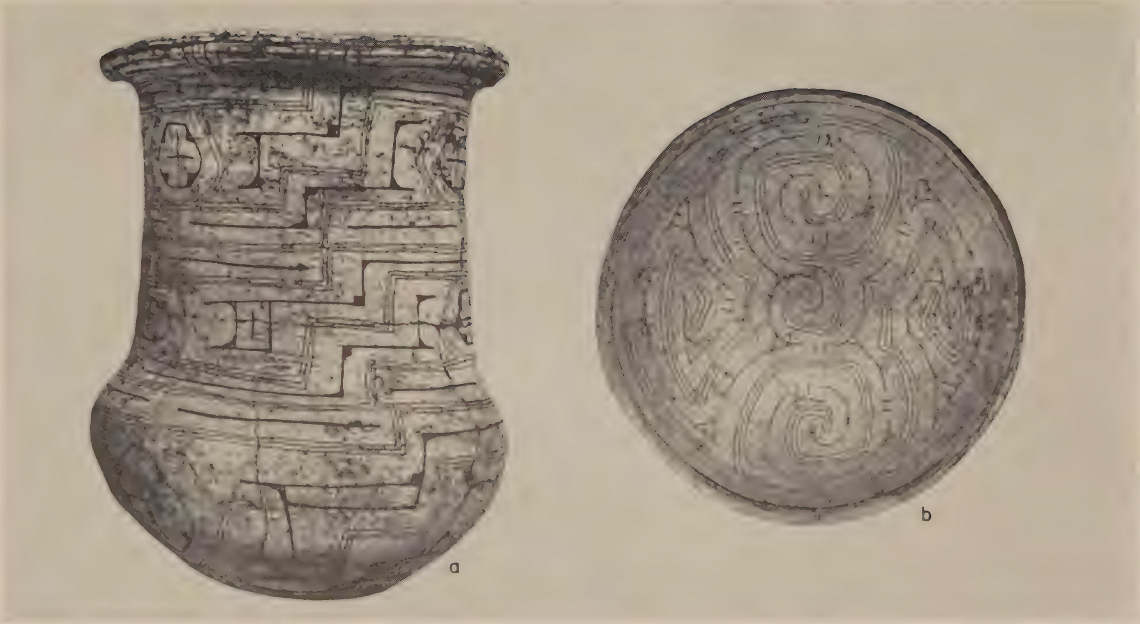
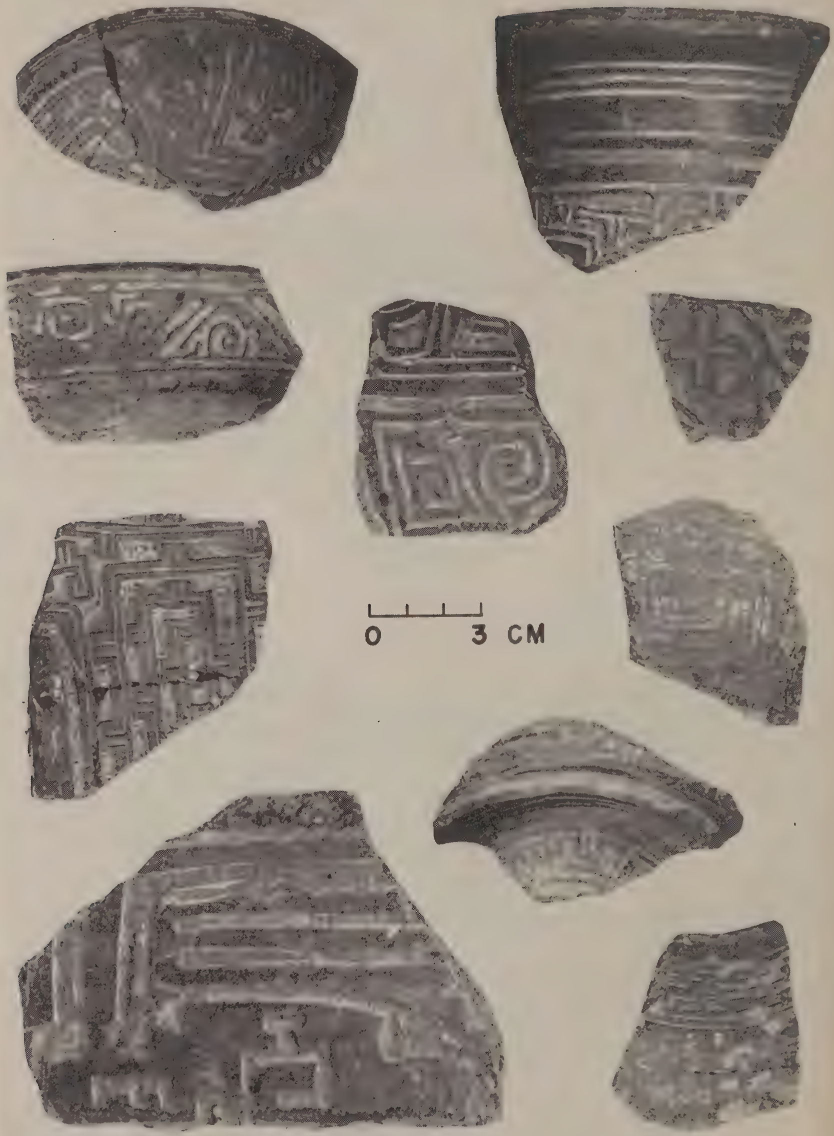
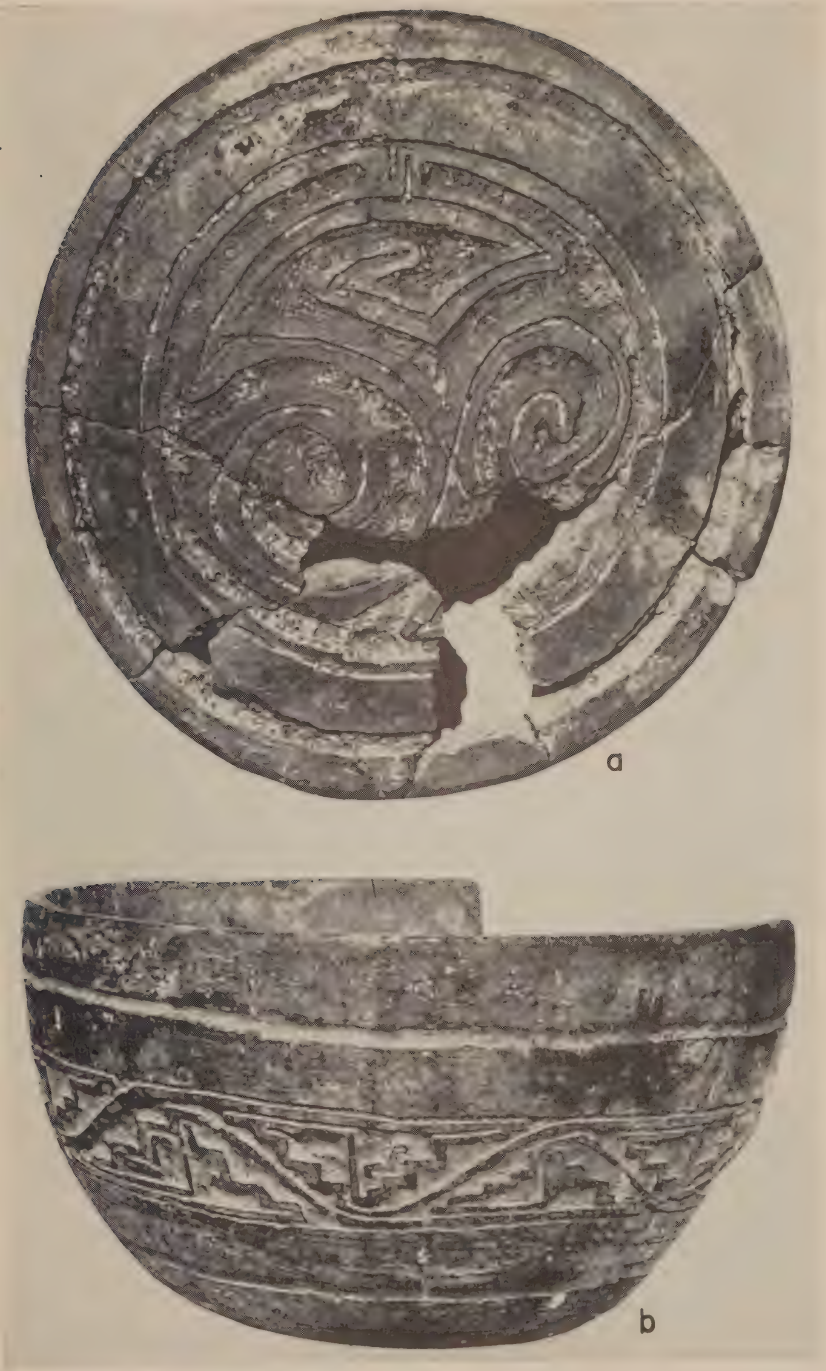
Type sherds of Anajás White Incised, Marajoara Phase. (American Museum of Natural History.)



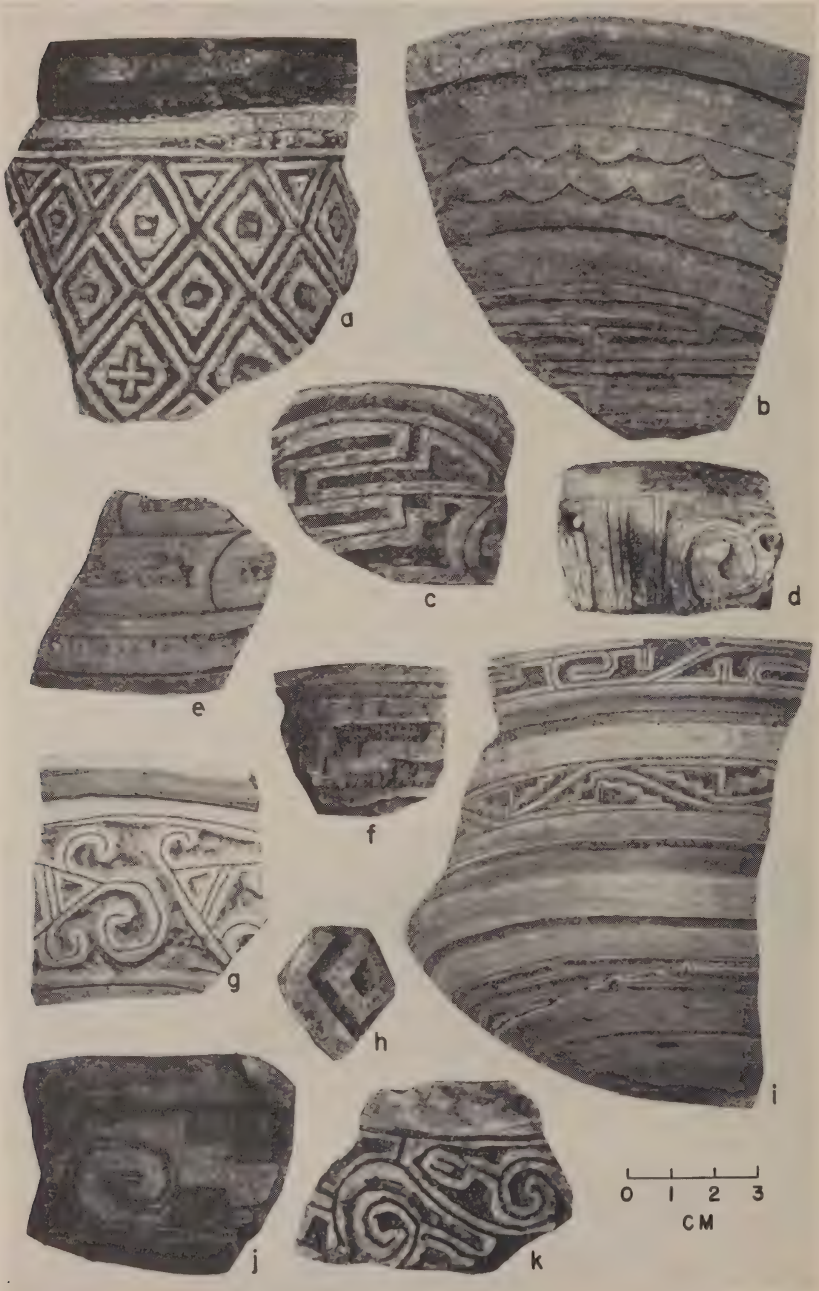
Anajás White Incised vessels, Marajoara Phase. *a*, J–15, Mound 1, Burial Group 1, jar 5. *b*, University Museum, Philadelphia.



Type sherds of Ararí Double-slipped Excised, Marajoara Phase.



Ararí Plain Excised vessels. *a*, J–14, Mound 1, cut 1, lid of jar J; diameter 15 cm. *b*, J–14, Mound 2, surface, rim diameter 19 cm.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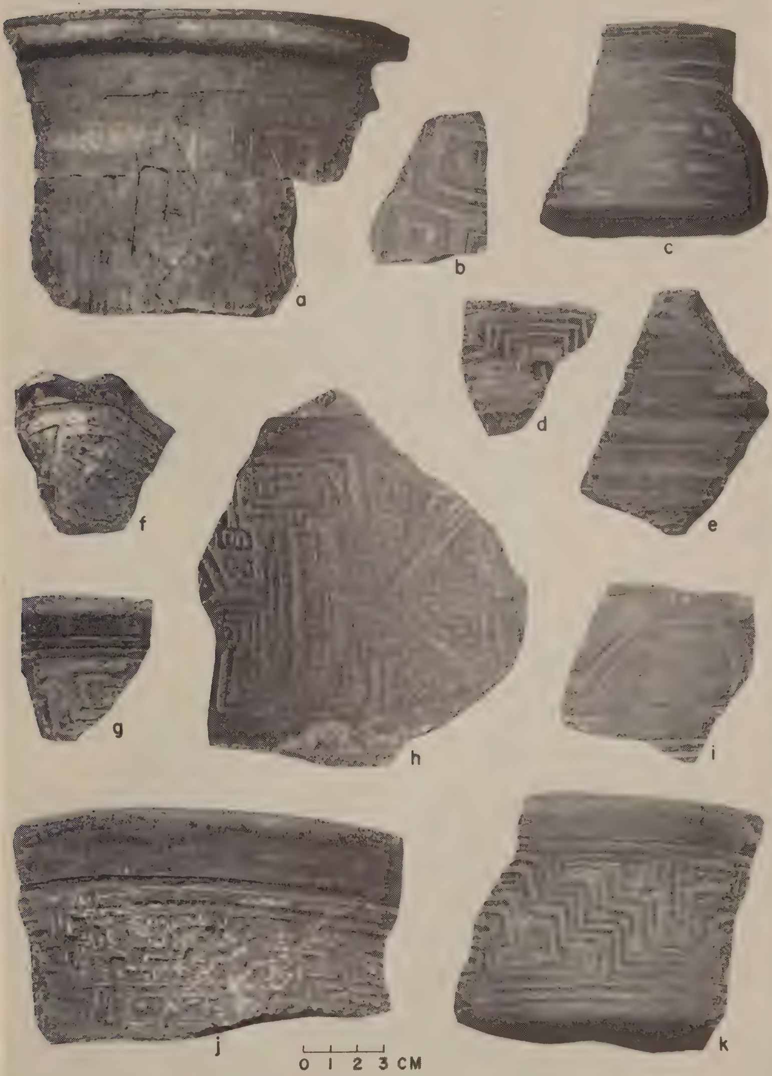
Type sherds of Ararí Plain Excised, Marajoara Phase.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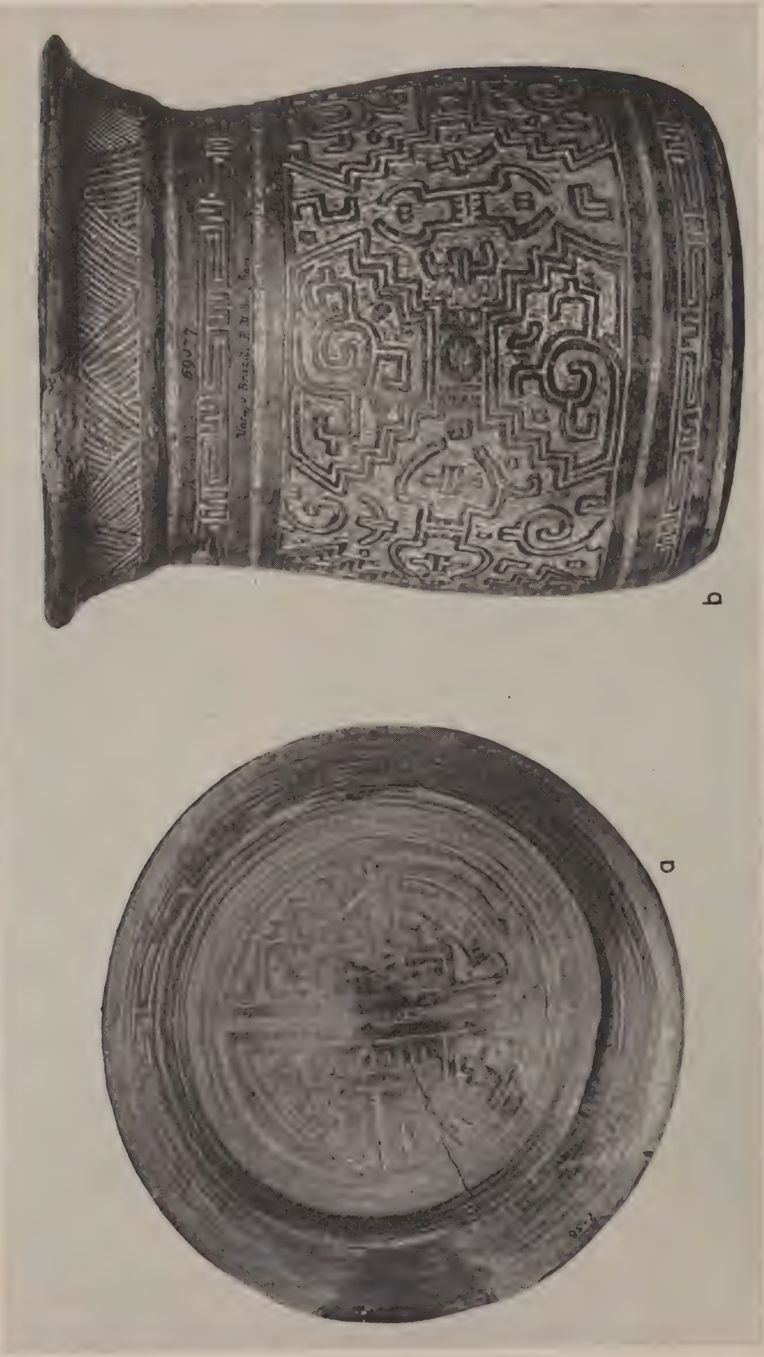
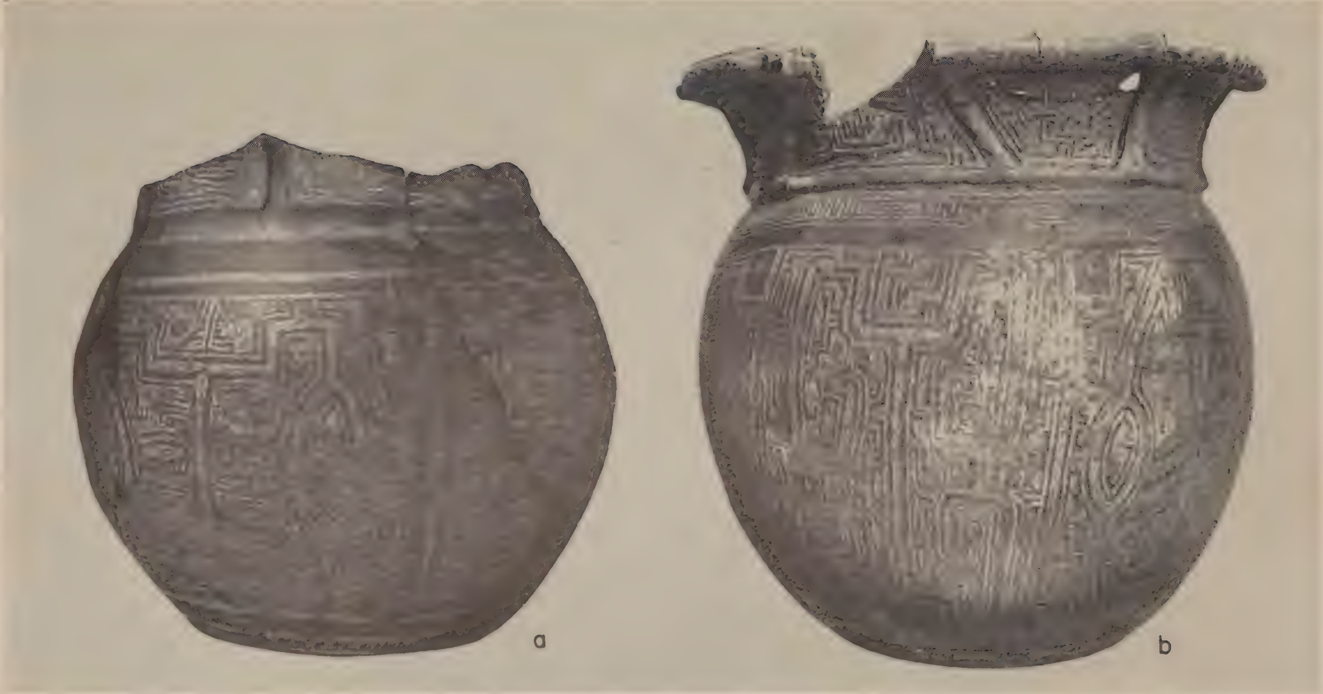
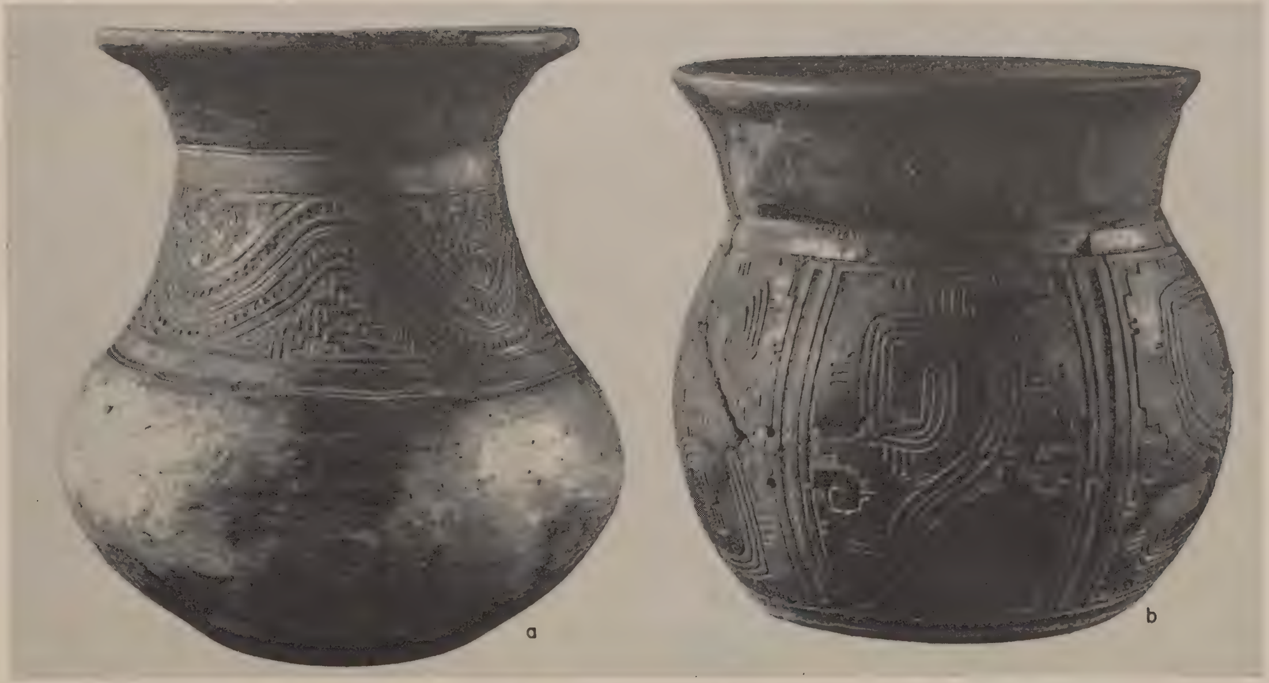
Type sherds of Ararí Red Excised, Marajoara Phase.



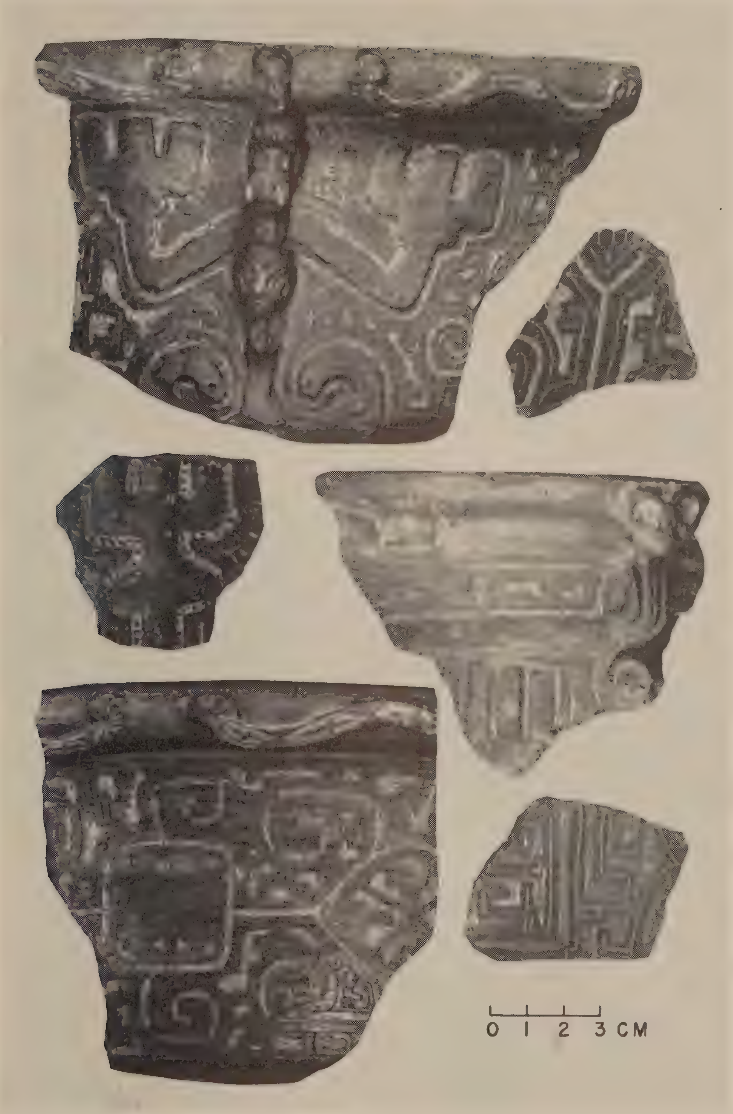
Ararí Red Excised vessels, Marajoara Phase. *a*, Fortaleza. University Museum, Philadelphia, No. SA 2058; diameter 30 cm. *b*, United States National Museum No. 59077; height 33 cm.



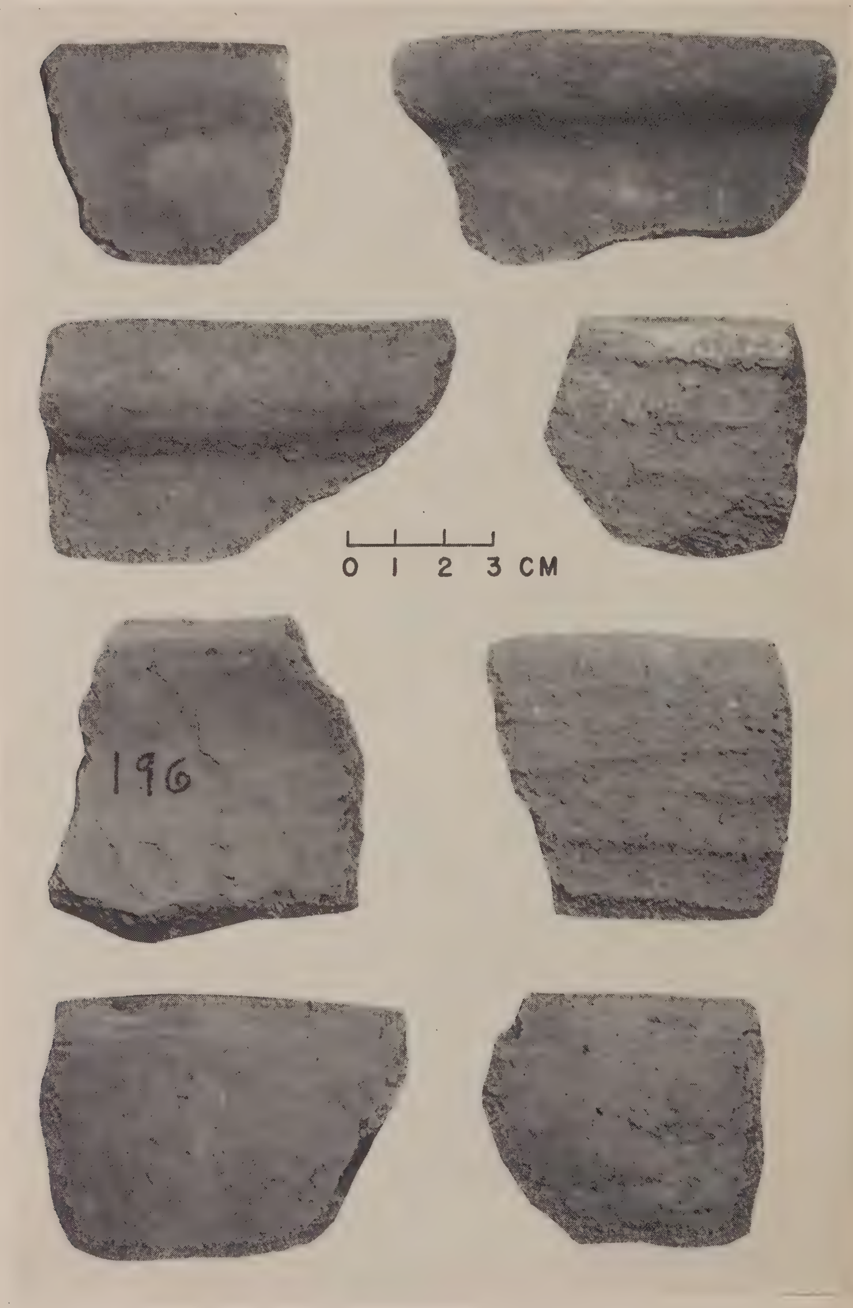
Arari Red Excised vessels, Marajoara Phase. *a*, Rio Camutins; University Museum, Philadelphia, No. SA 1797; height 27 cm. *b*, J–15, Mound 1, cut 1, jar A; height 38 cm.



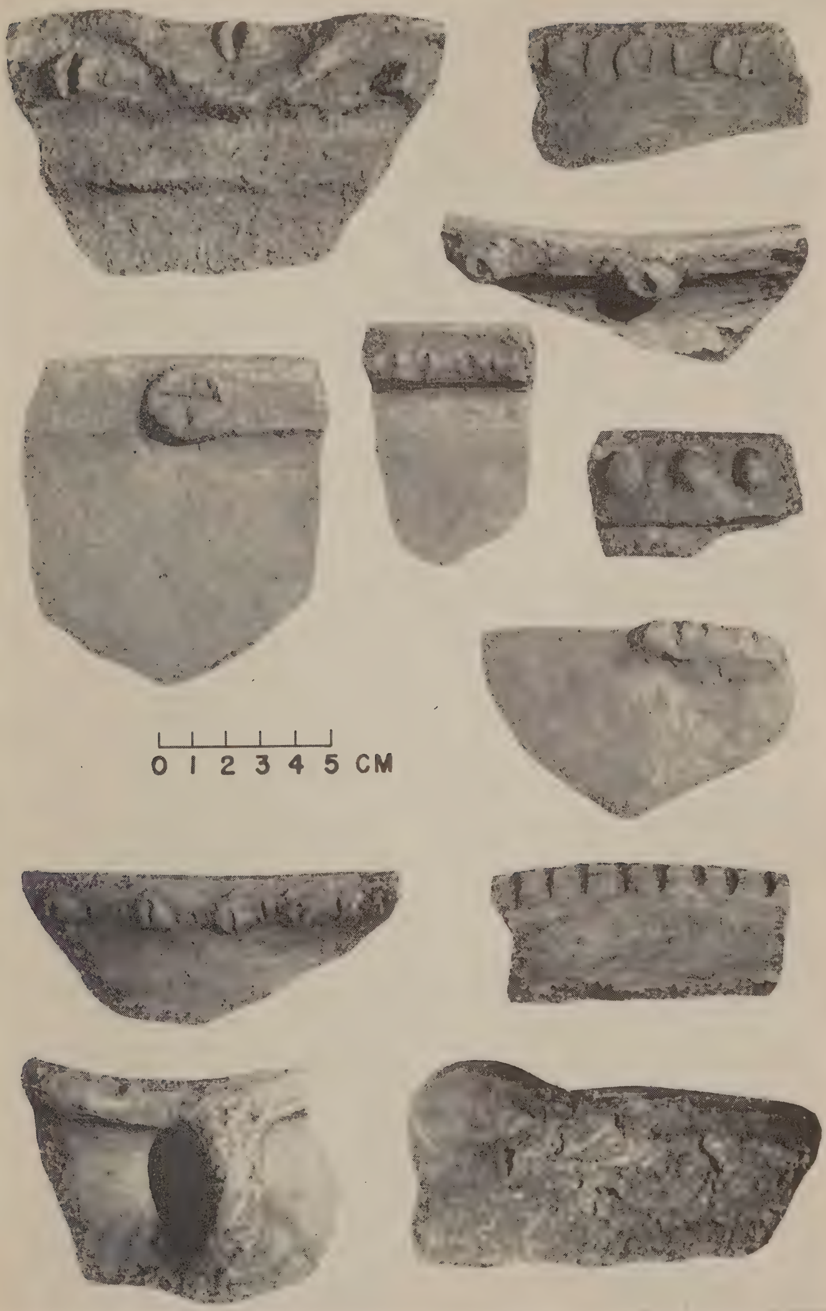
Araríi Red Excised vessels, Marajoara Phase: *a*, Rio Camutins; University Museum, Philadelphia, No. SA 1597; height 22 cm. *b*, Rio Camutins; University Museum, Philadelphia, No. SA 1566; height 26 cm.



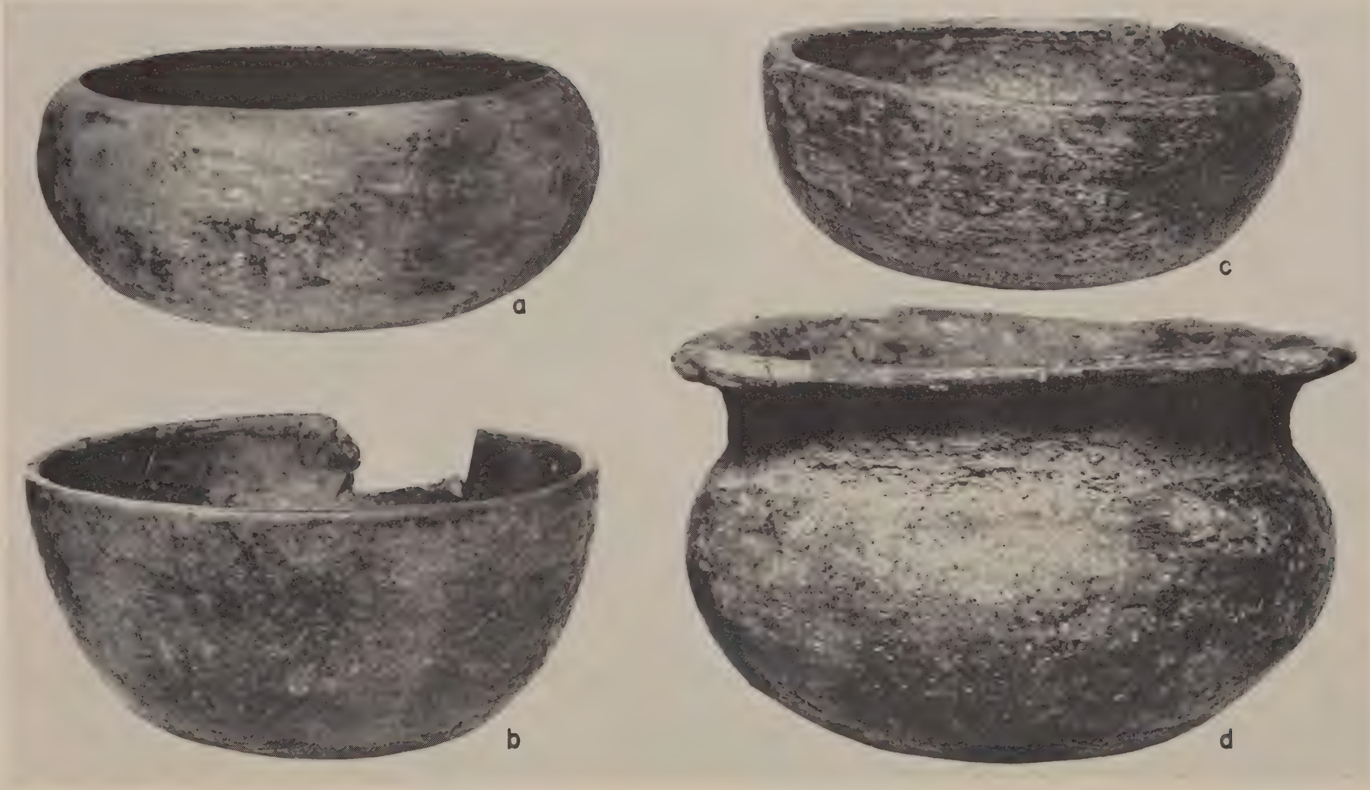
Type sherds of Ararí Red Excised, White-retouched, Marajoara Phase. (American Museum of Natural History.)



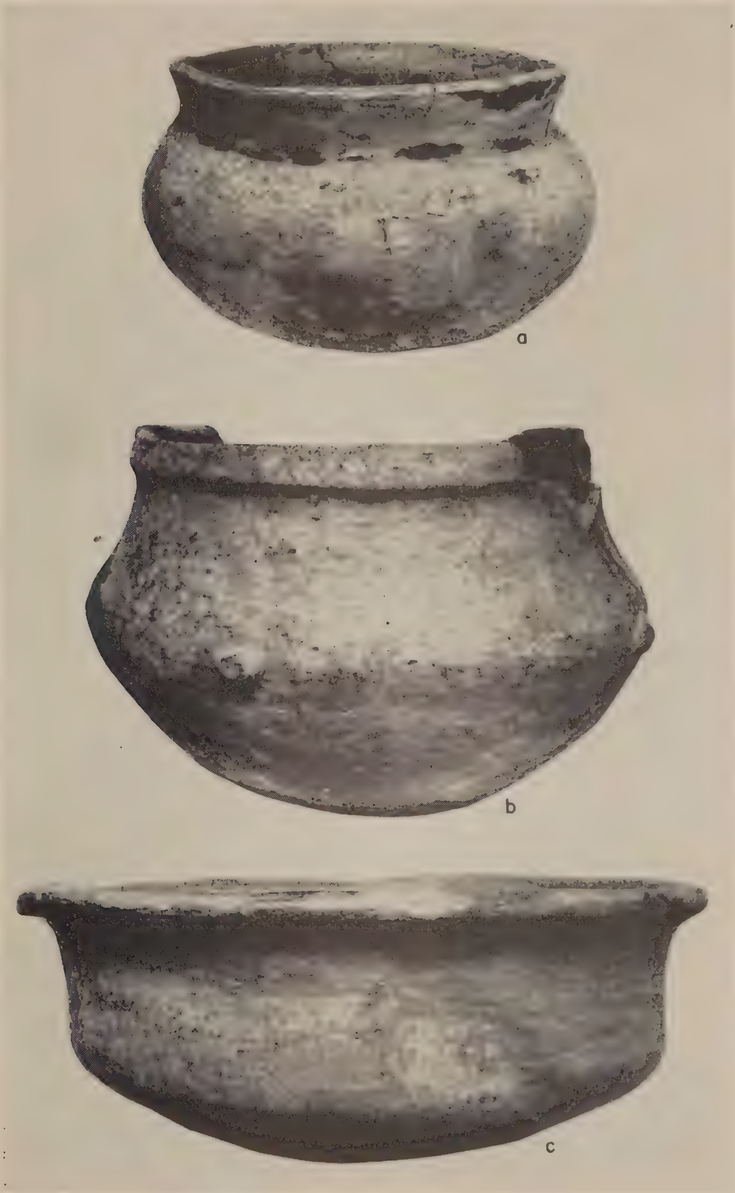
Rim sherds of Camutins Plain and Inajá Plain bowls and jars from Marajoara Phase habitation mounds.



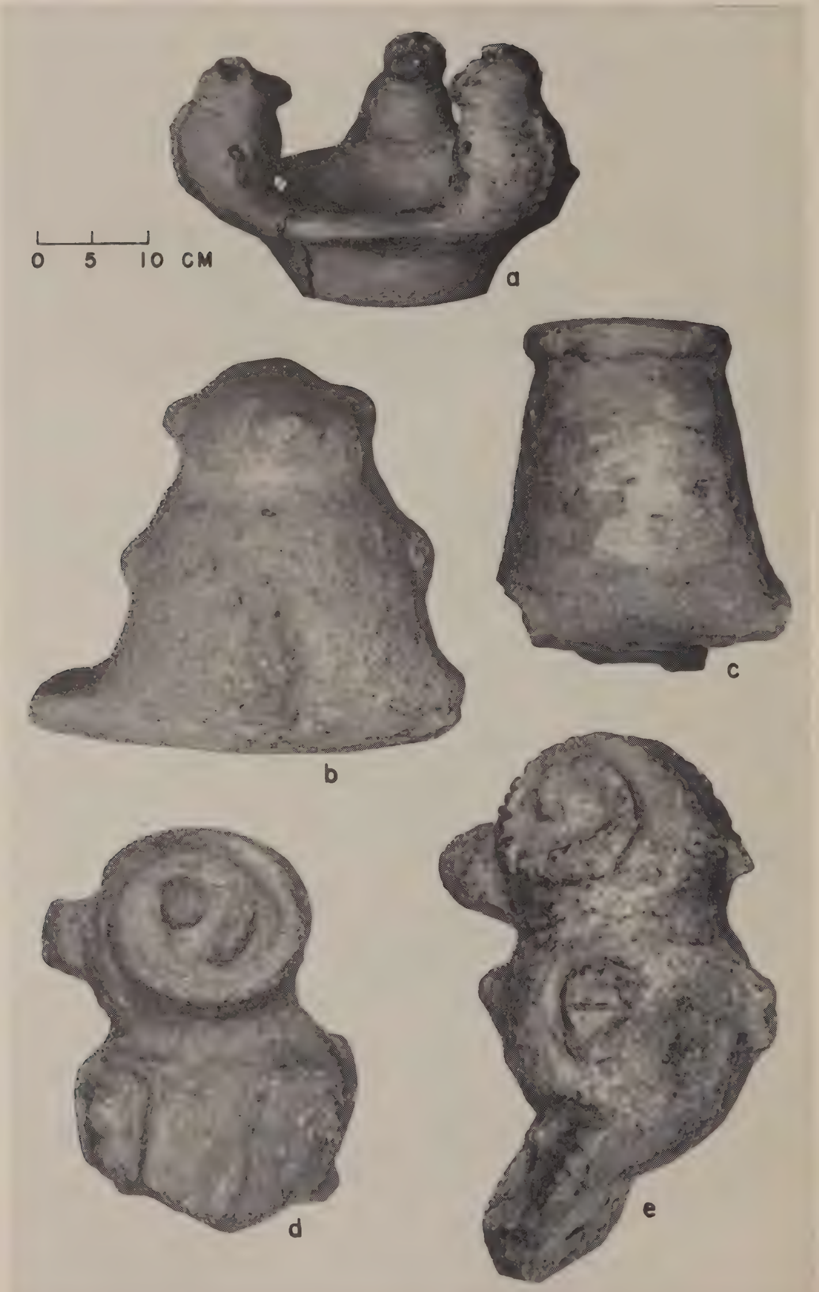
Rim sherds of Camutins Plain and Inajá Plain bowls and jars from Marajoara Phase cemetery mounds.



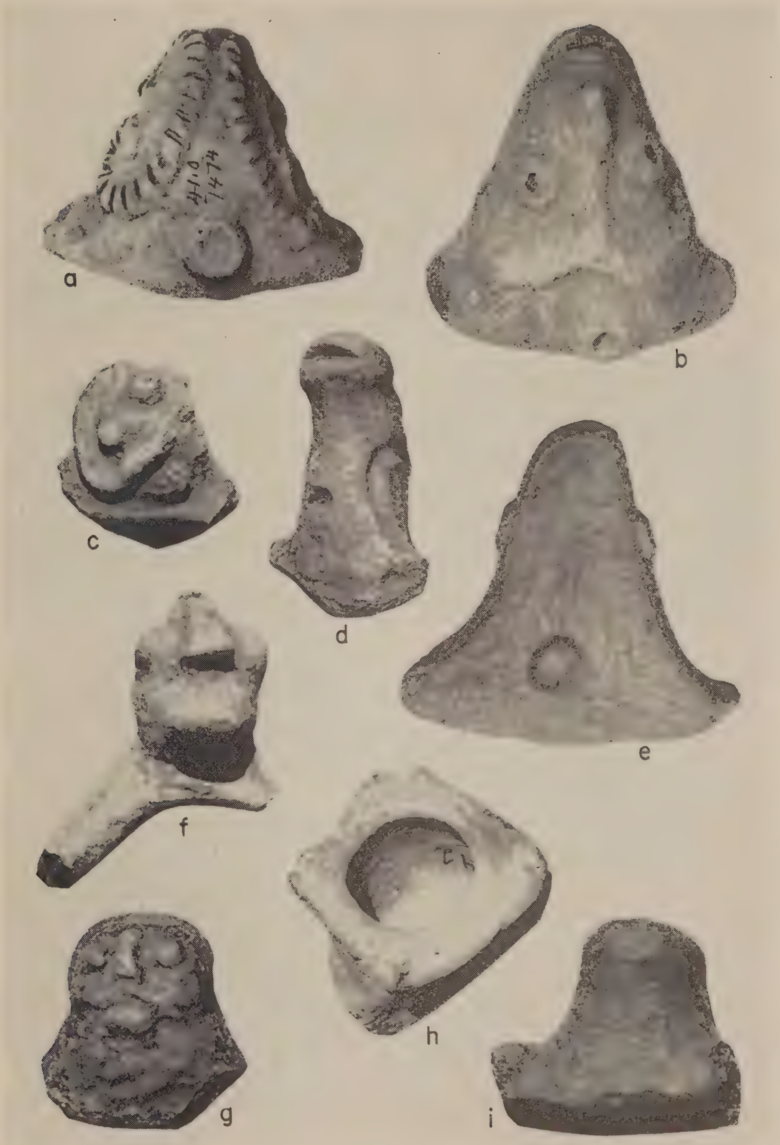
Inajá and Camutins Plain vessels associated with Marajoara Phase burials. *a*, Inajá Plain; J–14, Mound 1, cut 1, upper bowl from jar H; maximum diameter 21 cm. *b*, Inajá Plain; J–14, Mound 1, cut 1, lower bowl from jar H; maximum diameter 16 cm. *c*, Camutins Plain; J–14, Mound 1, contents of jar M; maximum diameter 16 cm. *d*, Inajá Plain; J–14, Mound 1, cut 1, contents of jar M; maximum rim diameter 22–23 cm.



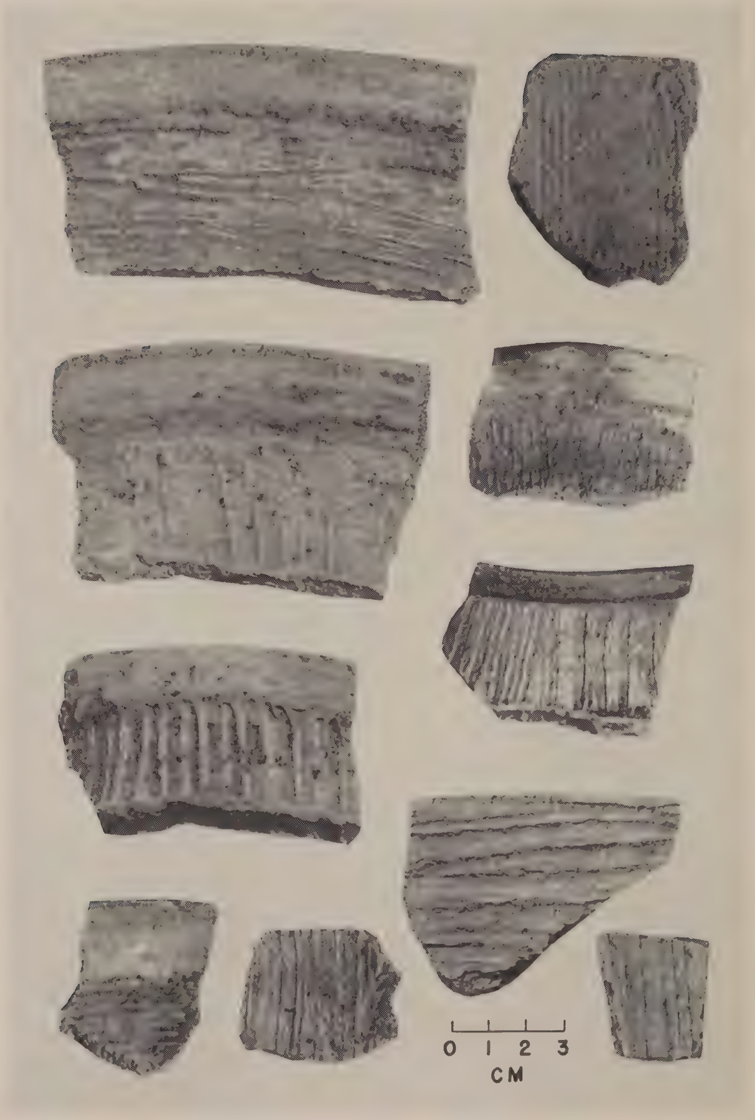
Vessels from Marajoara Phase cemeteries: *a*, Joanes Painted; J–15, Mound 1, cut 2, jar B, maximum diameter 18 cm. *b*, Inajá Plain; J–15, Mound 1, surface; mouth diameter 20 cm. *c*, Camutins Plain; J–14, Mound 1, cut 1, contents of jar K; rim diameter 45–46 cm.



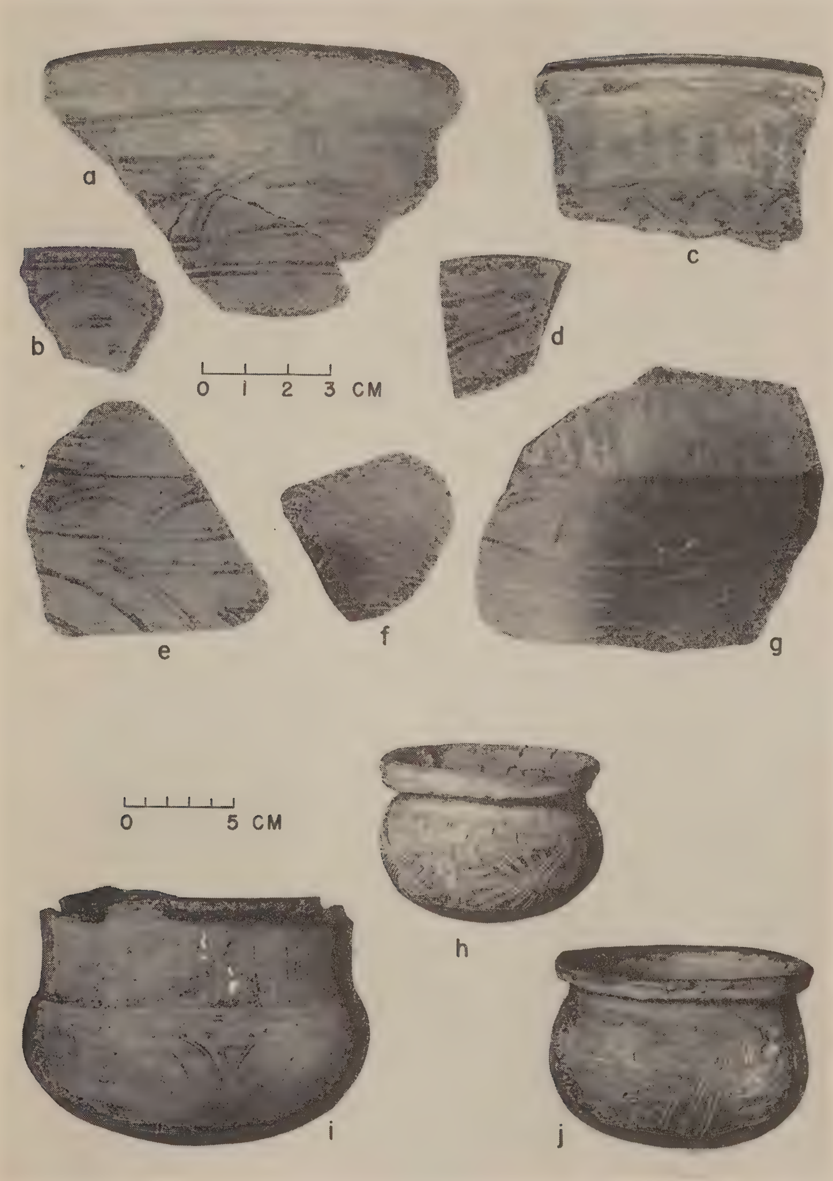
Large rim adornos from Camutins Plain and Inajá Plain Vessel Shape 4, Marajoara Phase.



Rim adornos from Camutins Plain and Inajá Plain Vessel Shape 4, Marajoara Phase.



Type sherds of Goiapí Scraped, Marajoara Phase.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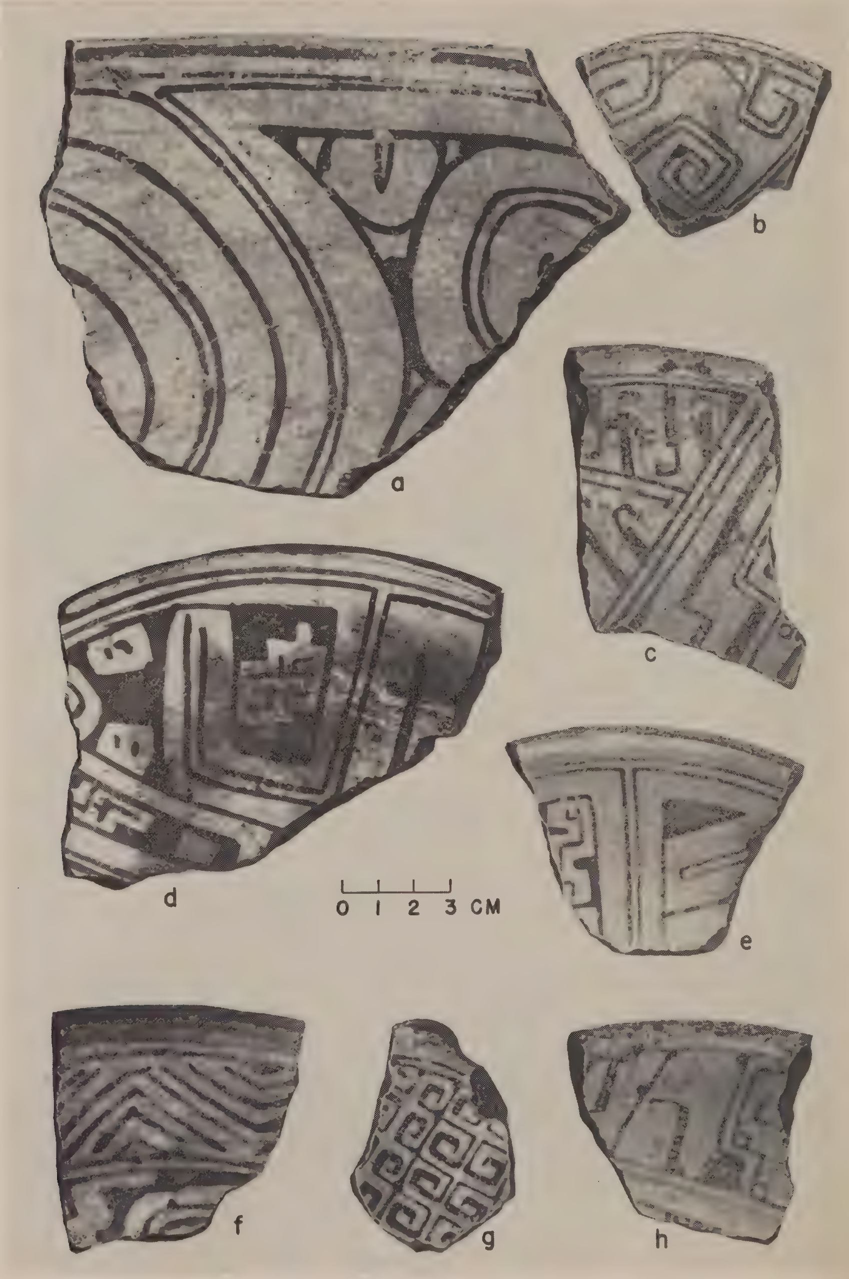
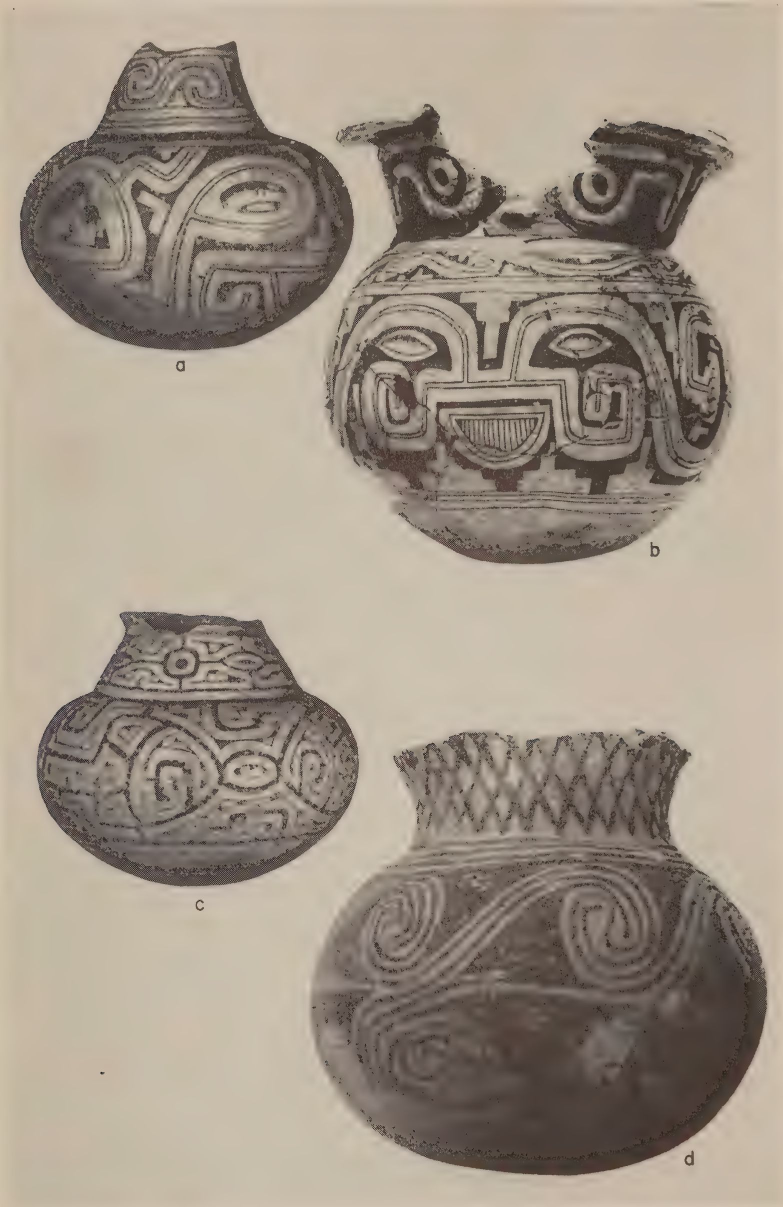
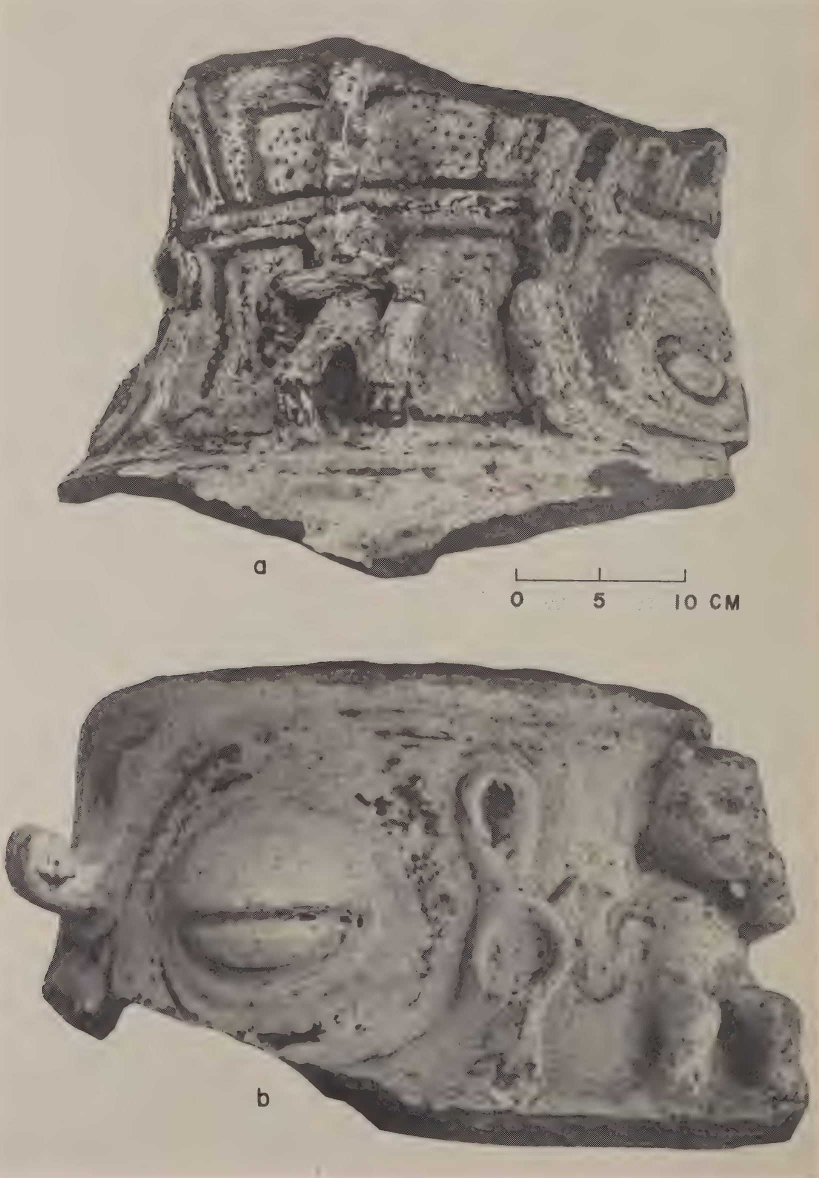
Sherds and vessels of Guajará Incised, Marajoara Phase. *a–g*, J–14 and J–15 excavations. *h–j*, University Museum, Philadelphia.



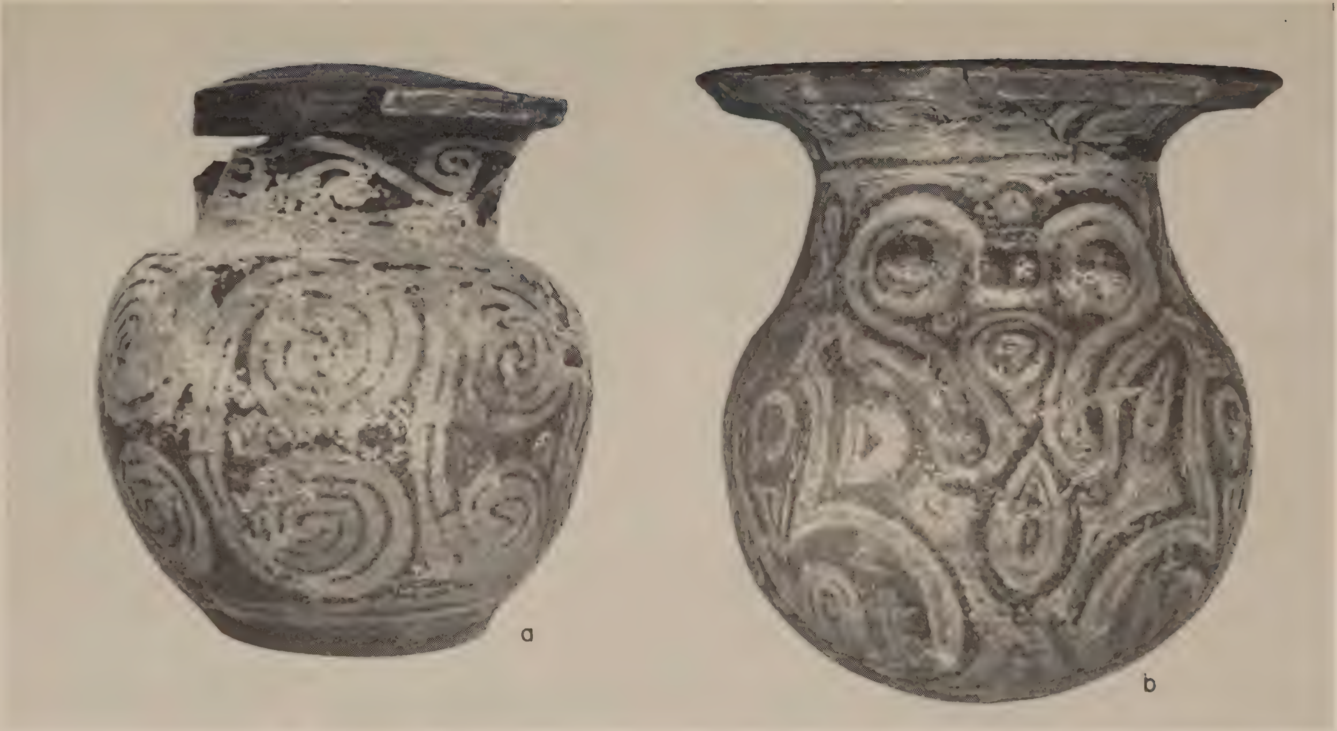
Type sherds from Joanes Painted bowls with red-on-white designs, Marajoara Phase. (American Museum of Natural History.)



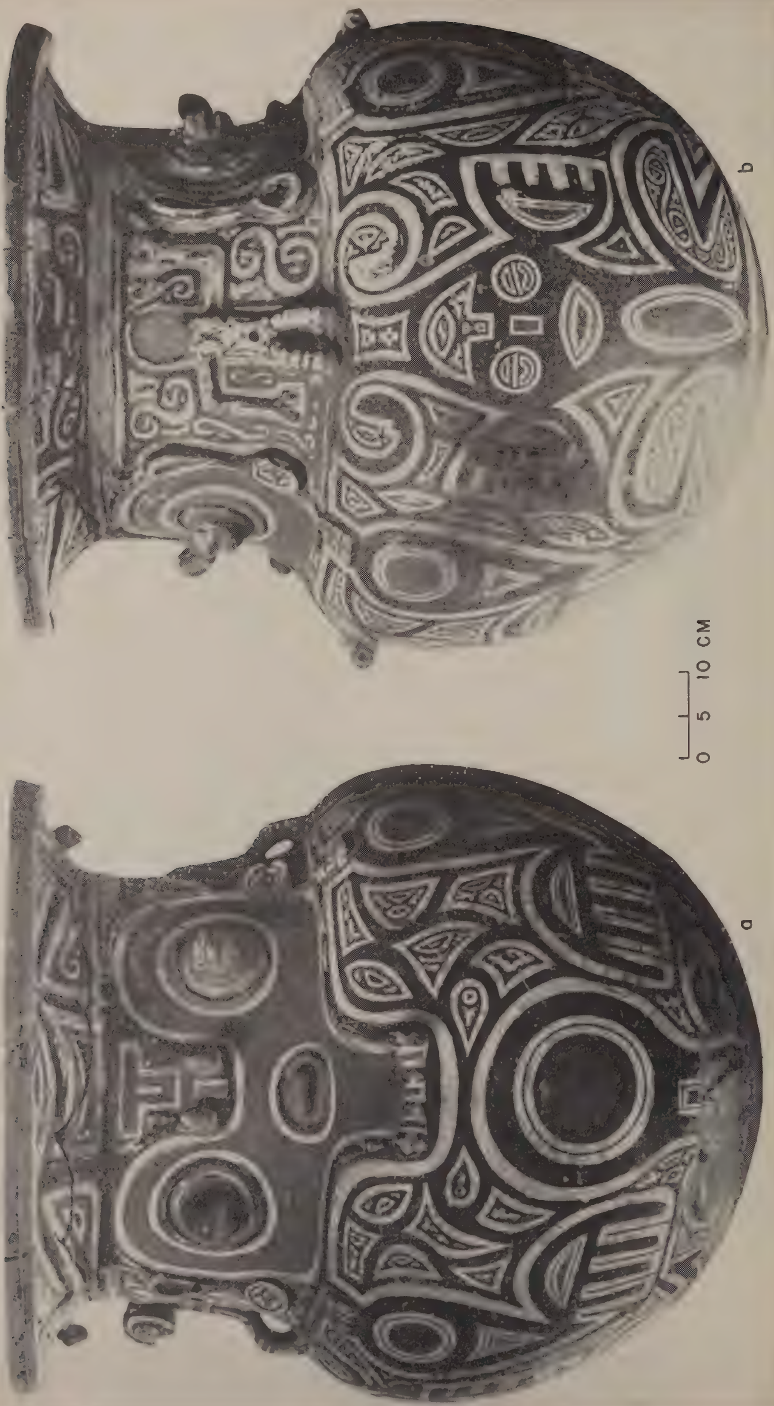
Vessels of Joanes Painted, Marajoara Phase. *a*, Red-on-white; height 22 cm. Pacoval; American Museum of Natural History, No. 41.0/1443. *b*, Red-on-white; height 38 cm. J–15, Mound 1, Burial Group 2, jar B. *c*, Black-on-white; height 20 cm. Pacoval; American Museum of Natural History, No. 41.0/1442. *d*, Black-on-white; height about 23 cm. Museu Nacional, Rio de Janeiro, No. 9303.



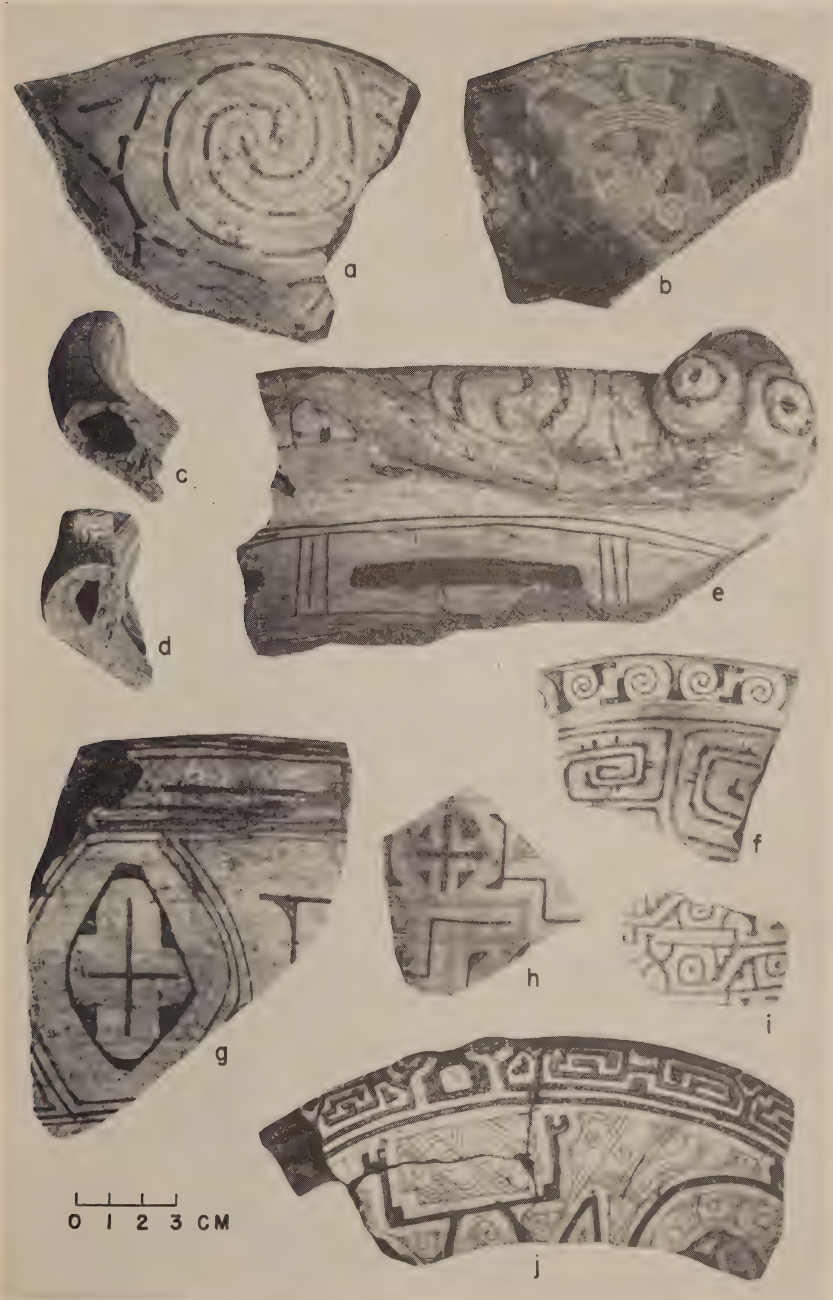
Neck sherds from large Joanes Painted burial urns, Polychrome Type B—red and black on white; J–15, Mound 1, surface.



Vessels of Joanes Painted, Polychrome Type B; Marajoara Phase. *a*, Red and black on white; height 26 cm. J–14, Mound 1, cut 1, jar J. The lid is Arari Plain Excised. *b*, Red and black on white; height 55 cm. Fortaleza; University Museum, Philadelphia, No. SA 1568.



Joanes Painted burial urn, Marajoara Phase. Two views of polychrome anthropomorphic jar L, J–14, Mound 1, cut 1; now in the Museu Paraense Emilio Goeldi, Belém.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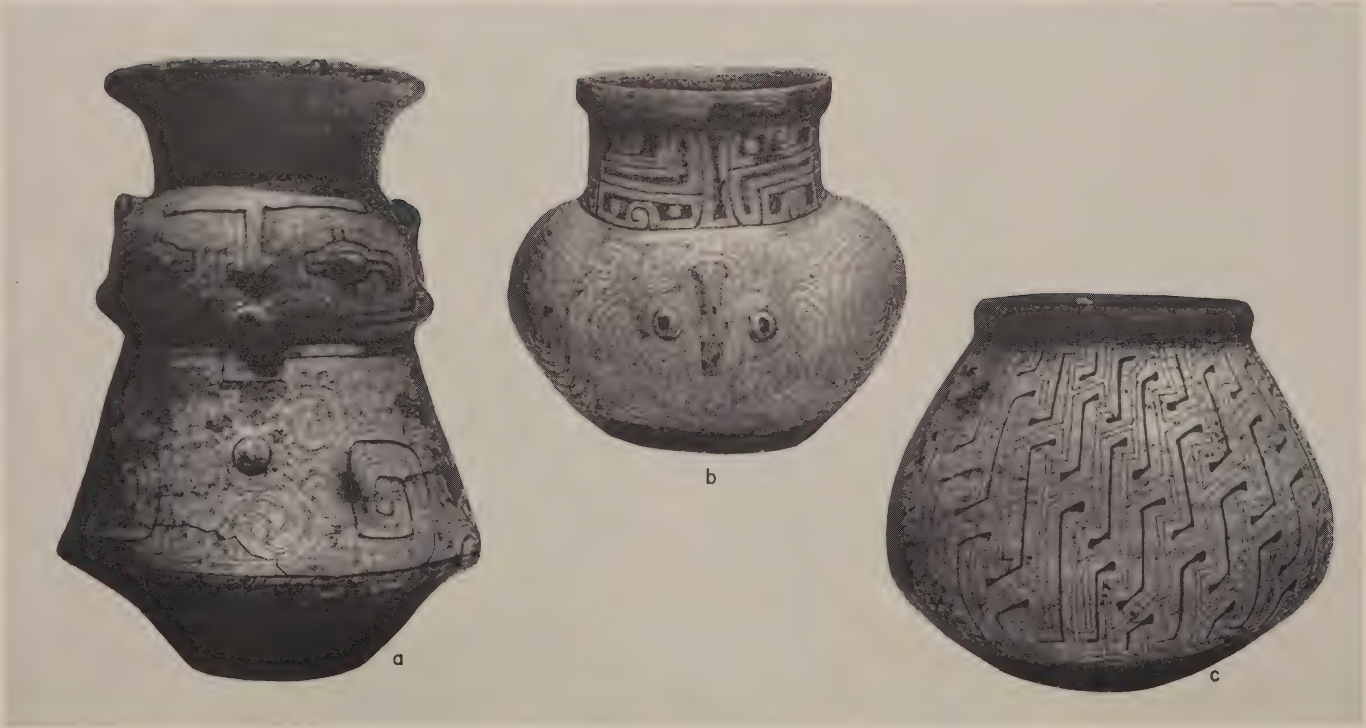
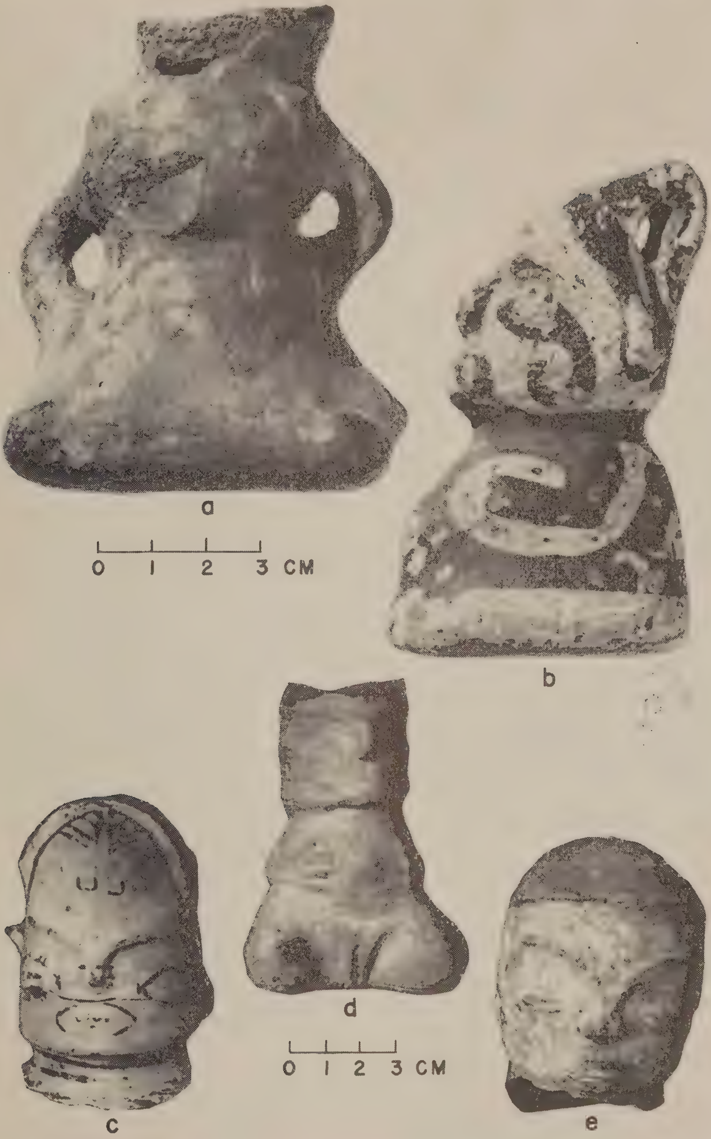
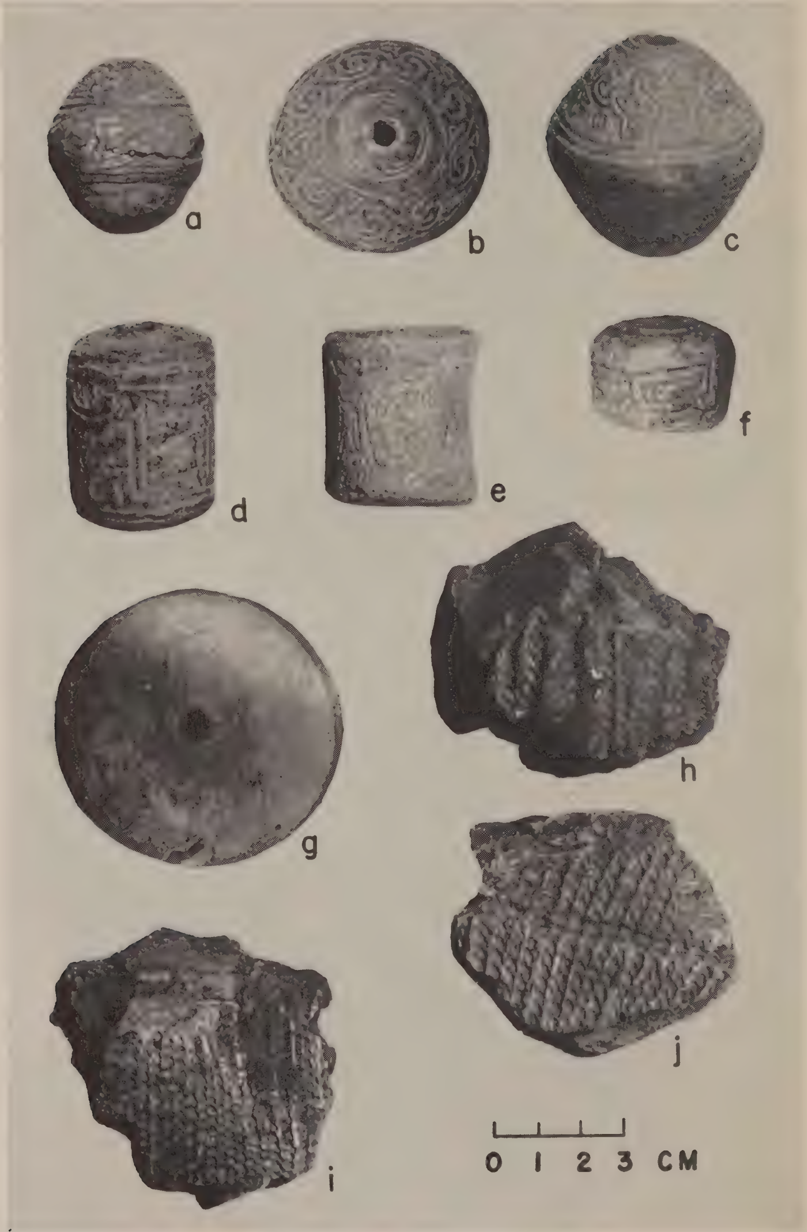
Type sherds of Pacoval Incised, Marajoara Phase. (American Museum of Natural History.)



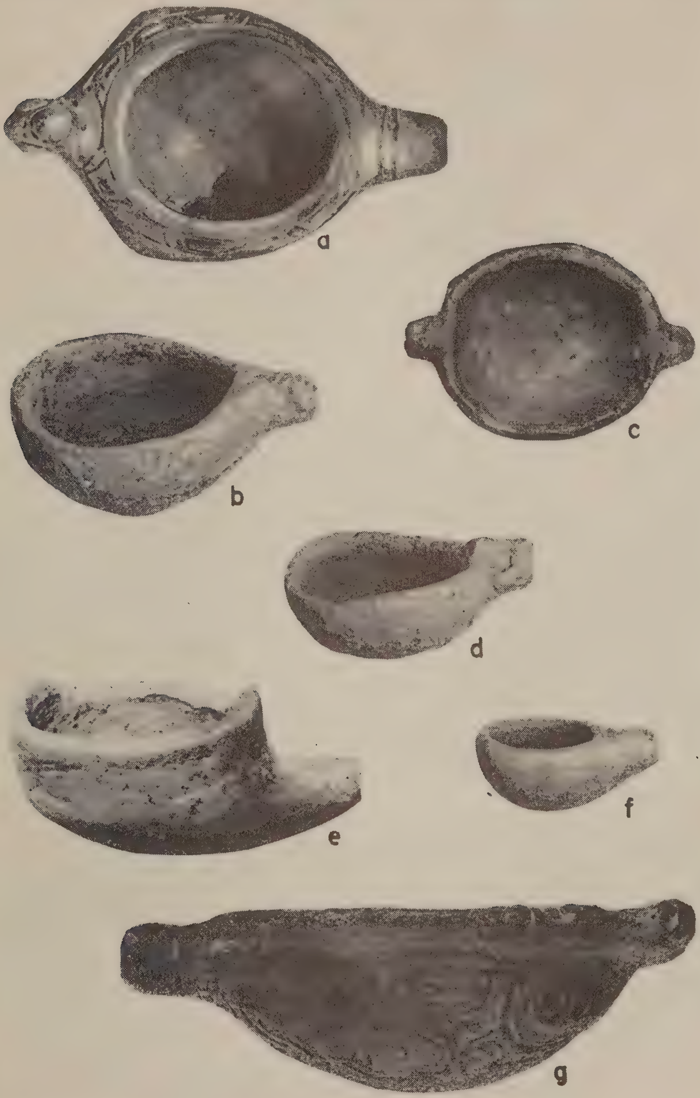
Pacoval Incised vessels, Marajoara Phase. *a*, Anthropomorphic jar; height 36.5 cm. Museu Paraense Emilio Goeldi. *b*, Jar with Pacoval Incised decoration on the neck and Anajás White Incised on the body; height 20 cm. Teso do Severino; Museu Paraense Emilio Goeldi. *c*, Round-bodied jar; height 22.5 cm. Museu Paraense Emilio Goeldi.



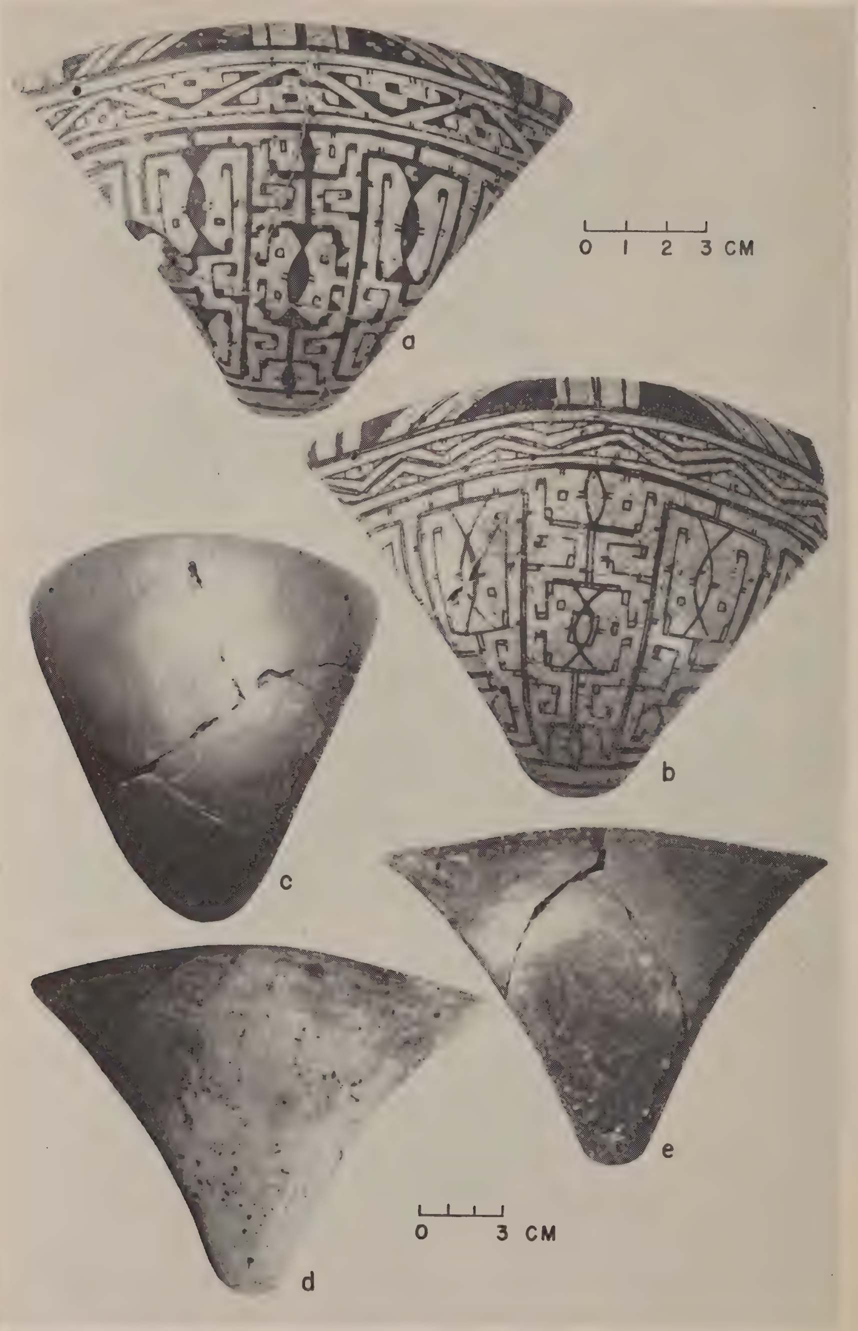
Pottery figurines from Marajoara Phase cemetery sites. *a*, Joanes Painted; J–15, Mound 1, surface. *b*, Joanes Painted; J–15, Mound 1, surface. *c*, Joanes Painted; University Museum, Philadelphia, No. SA 2113. *d*, Anajás Plain Incised; University Museum, Philadelphia, No. SA 2136. *e*, Joanes Painted; University Museum, Philadelphia, No. SA 1682.



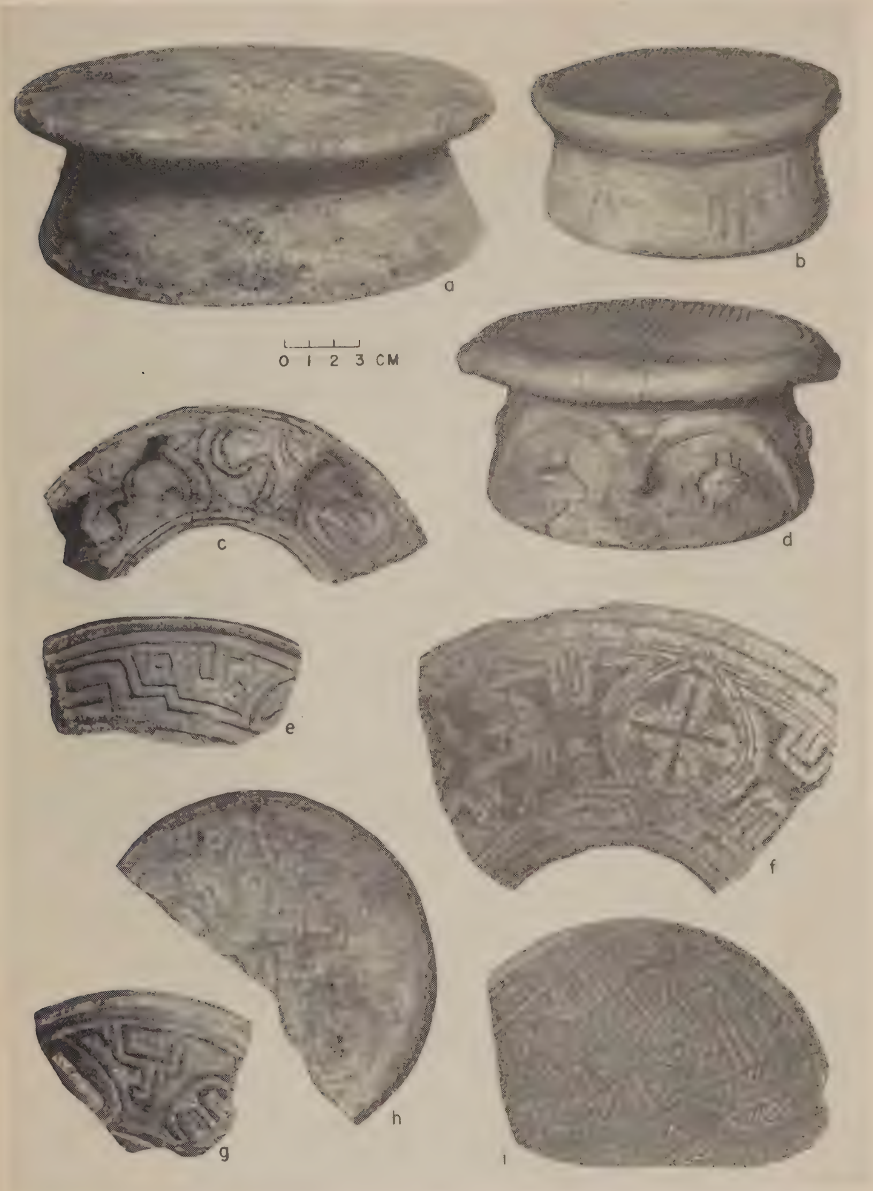
Miscellaneous pottery objects from Marajoara Phase cemetery sites. *a–f*, Spindle whorls; Pacoval; American Museum of Natural History. *g*, Spindle whorl; University Museum, Philadelphia. *h–j*, Fired clay with cord impressions, J–14, Mound 1, surface.



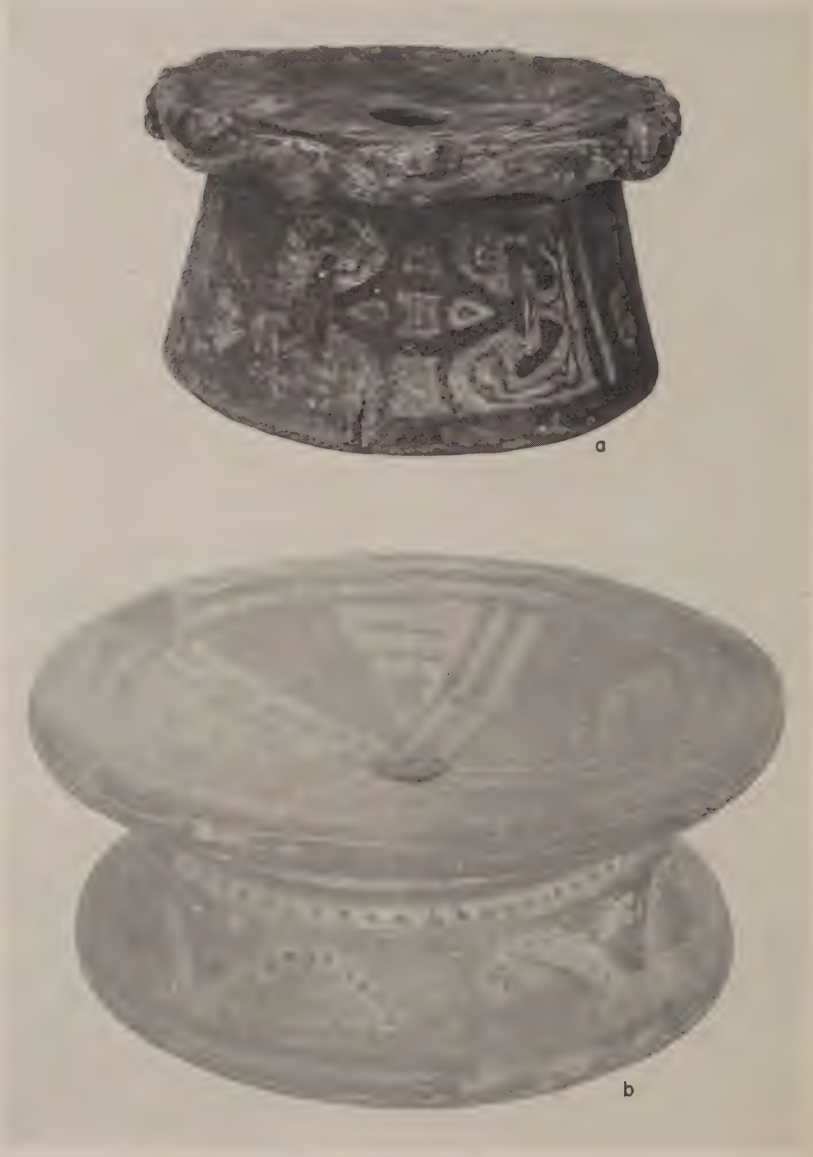
Pottery spoons from Marajoara Phase sites showing range in size and position of "spout." *a* and *c*, University Museum, Philadelphia. *b*, *d*, *f*, American Museum of Natural History. *e*, J–15, Mound 17, cut 1. *g*, United States National Museum, No. 233339.



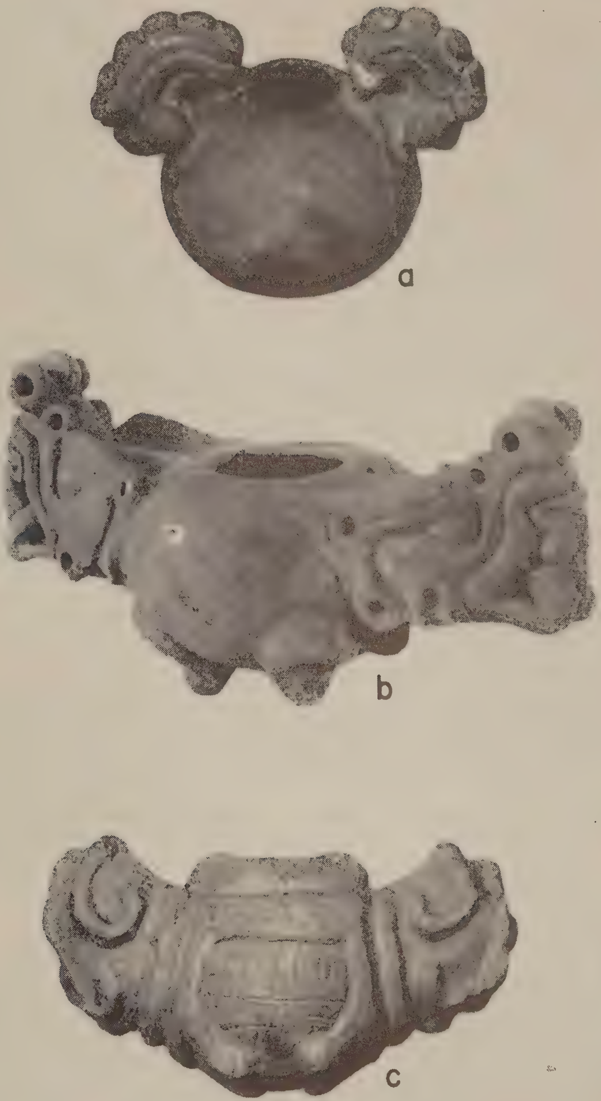
Pottery tangas from Marajoara Phase burial urns. *a-b*, Red-on-white; J-15, Mound 1. *c*, Plain; J–14, Mound 1, cut 1, contents of jar L. *d*, Red-slipped; associated with Camutins Plain vessel from J-15, Mound 1, cut 3, level 75-90 cm. *e*, Red-slipped; associated with jar L from J–14, Mound 1, cut 1.



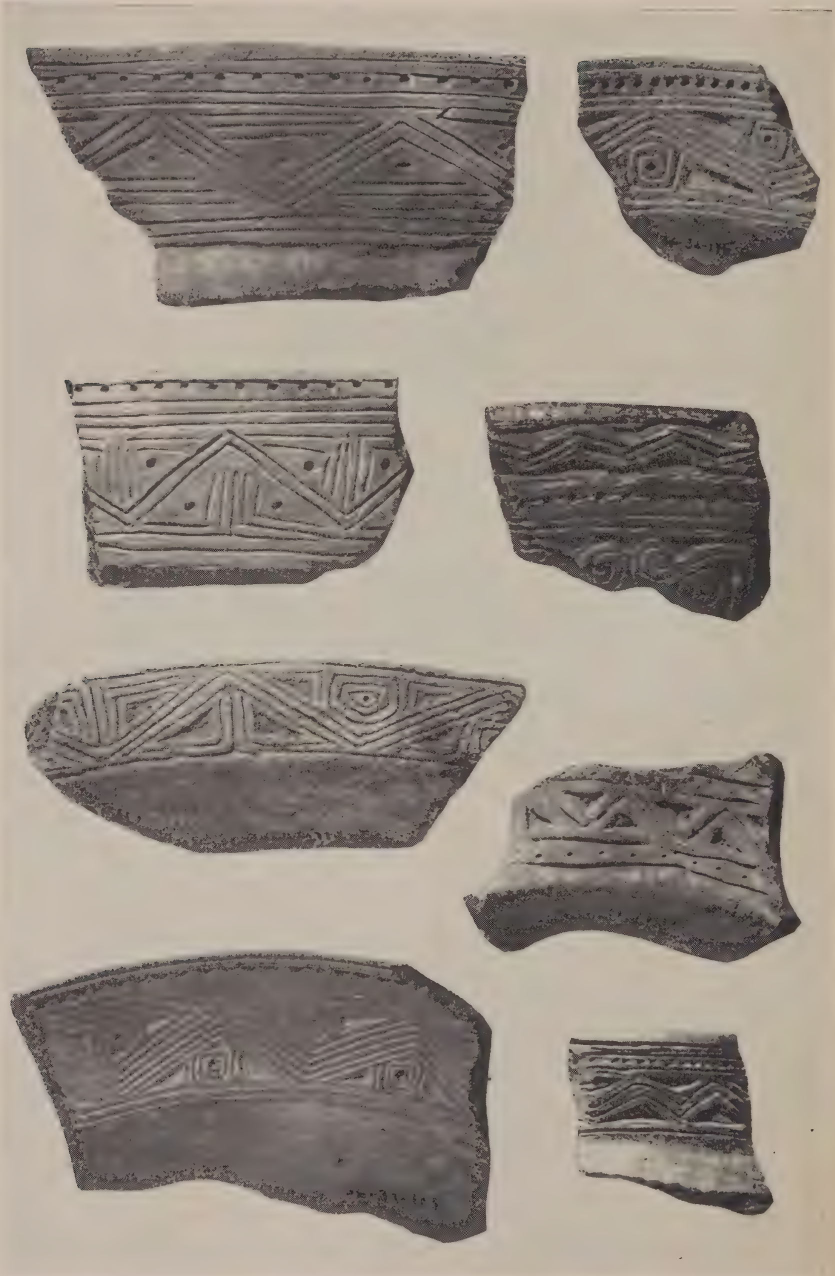
Pottery stools and stool fragments from Marajoara Phase sites. *a*, Inajá Plain; J–15, Mound 10. *b*, Ararí Plain Excised; University Museum, Philadelphia. *c*, Anajás White Incised; American Museum of Natural History, No. 41.0/1476. *d*, Anajás Plain Incised; University Museum, Philadelphia, No. SA 1948. *e*, Arari Red Excised; American Museum of Natural History, No. 41.0/1462. *f*, Ararí Plain Excised; American Museum of Natural History. *g*, Ararí Red Excised; American Museum of Natural History, No. 41.0/1468. *h*, Ararí Red Excised; American Museum of Natural History, No. 41.0/1401. *i*, Anajás Plain Incised; American Museum of Natural History, No 41.0/1455.



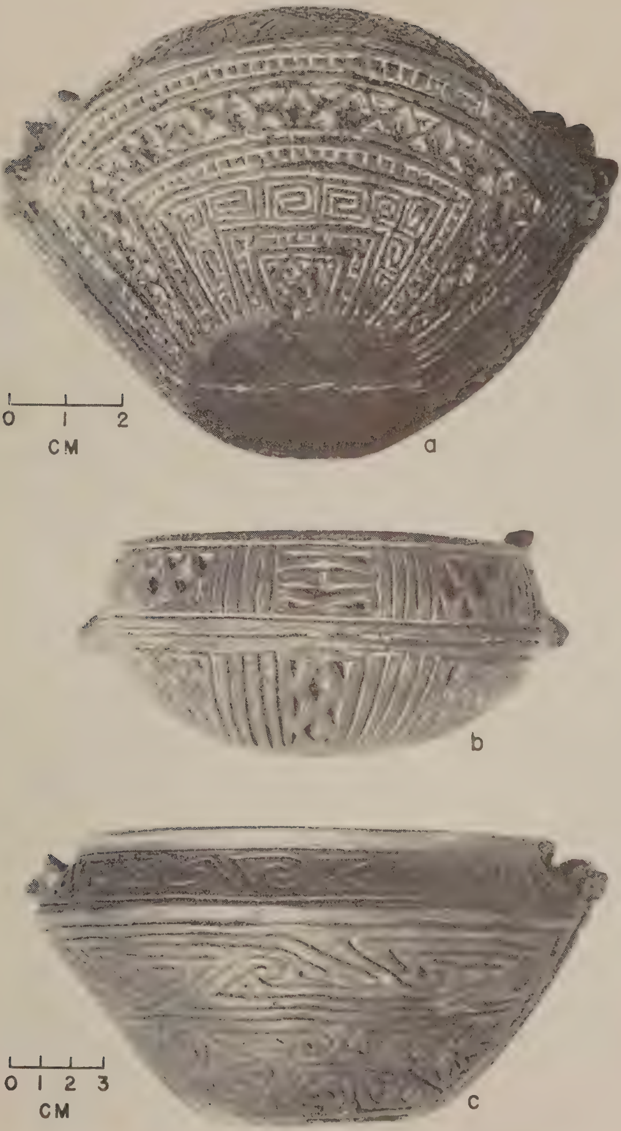
Painted pottery stools. *a*, Marajoara Phase; height 11.5 cm. United States National Museum, No. 36535. *b*, Cerro Narrio, Ecuador; height about 28 cm. Duran collection, Ecuador. (Photograph courtesy Chicago Natural History Museum.)



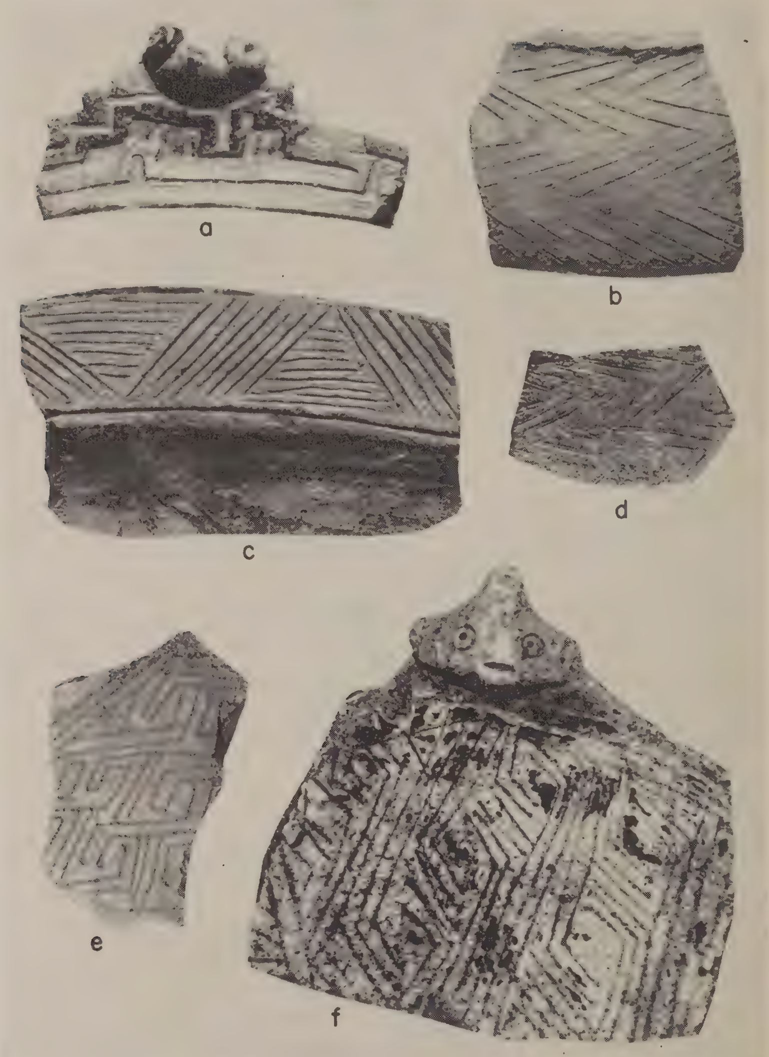
Small pottery vessels with large, grotesque, "wing" adornos. *a*, Costa Rica; height 5.2 cm. United States National Museum, No. 59972. *b*, Colombia; height about 7.5 cm. Photograph courtesy American Museum of Natural History, No. 41.1/8137. *c*, Marajoara Phase; height about 6 cm. (American Museum of Natural History.)



Sherds with incised and excised designs from Arauquin, Venezuela. (University Museum, Philadelphia.)

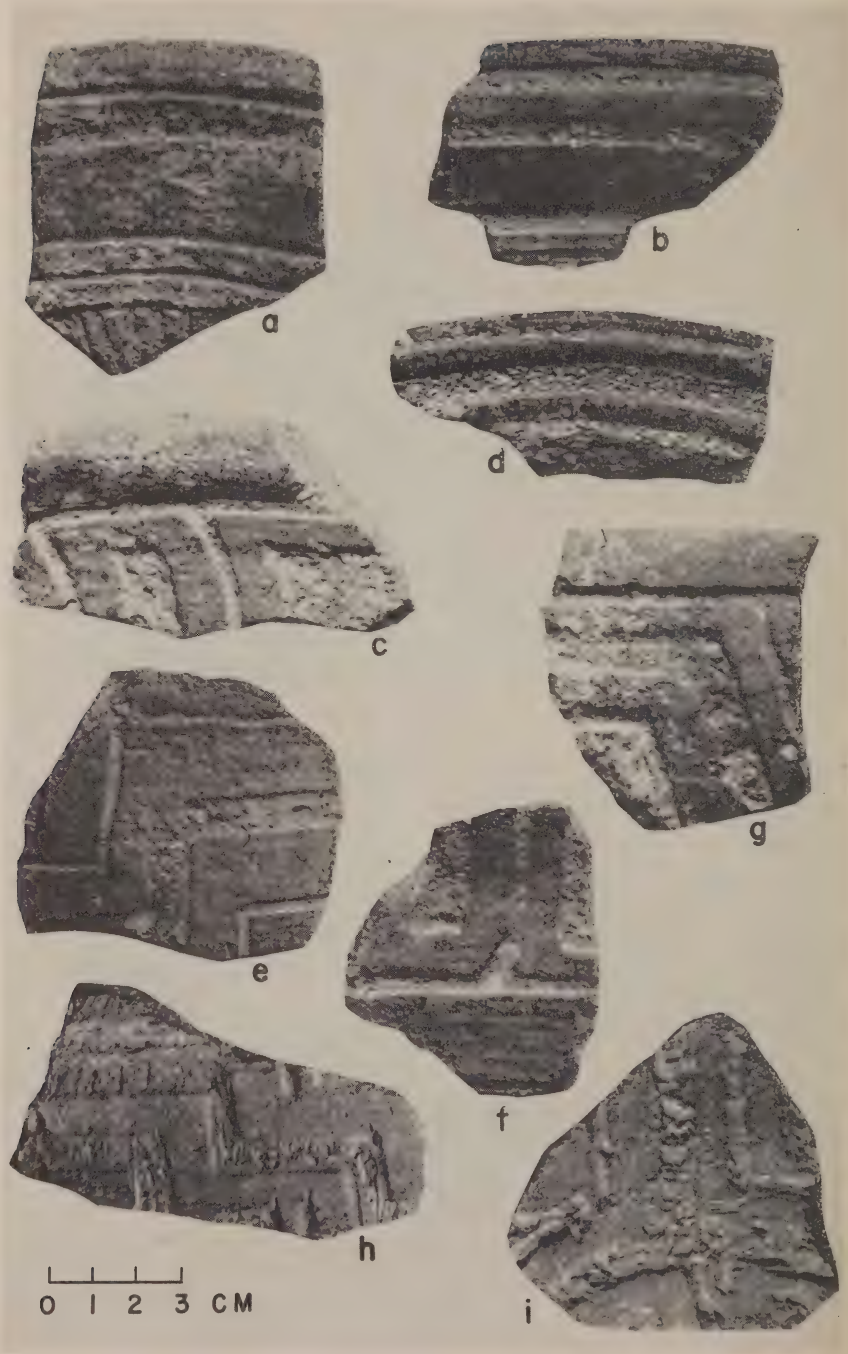


Vessels with incised and excised decoration from Colombia: *a*, United States National Museum No. 24243. *b*, United States National Museum, No. 233918. *c*, United States National Museum No. 233915.



Decorated sherds from the Lower Amazon. *a–d*, Excised and incised sherds from Oriximiná. (Collection of Fritz Ackermann, Belém.) *e–f*, Incised sherds from Itacoatiara. (Collection of Frederico Barata, Belém.)

Acauan Phase site of M–3—Acauan. *a*, Sink with the site in the background. *b*, Tree at east end of site with the typical tree-sprinkled *campo* in the background. Note the slightly more luxuriant grass growth on the site.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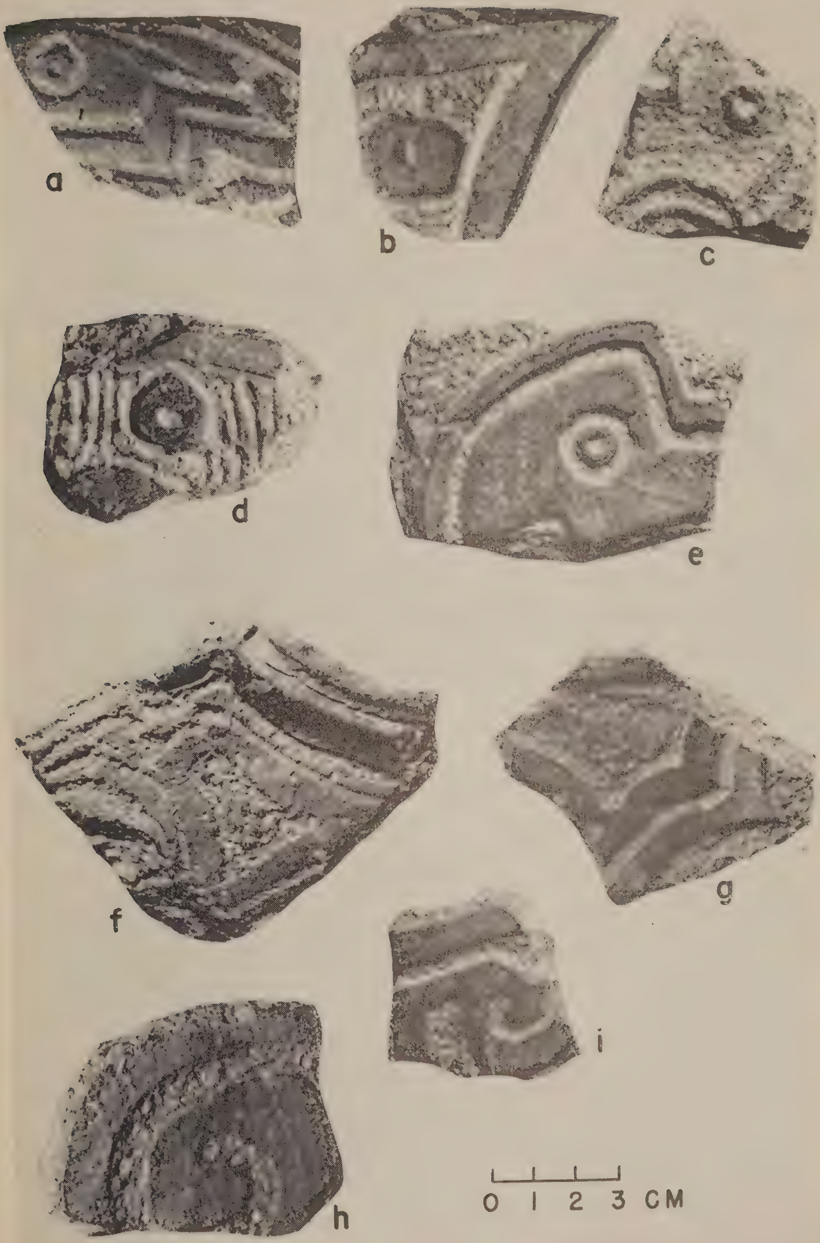
Type sherds of Acauan Excised with rectilinear motifs, Acauan Phase.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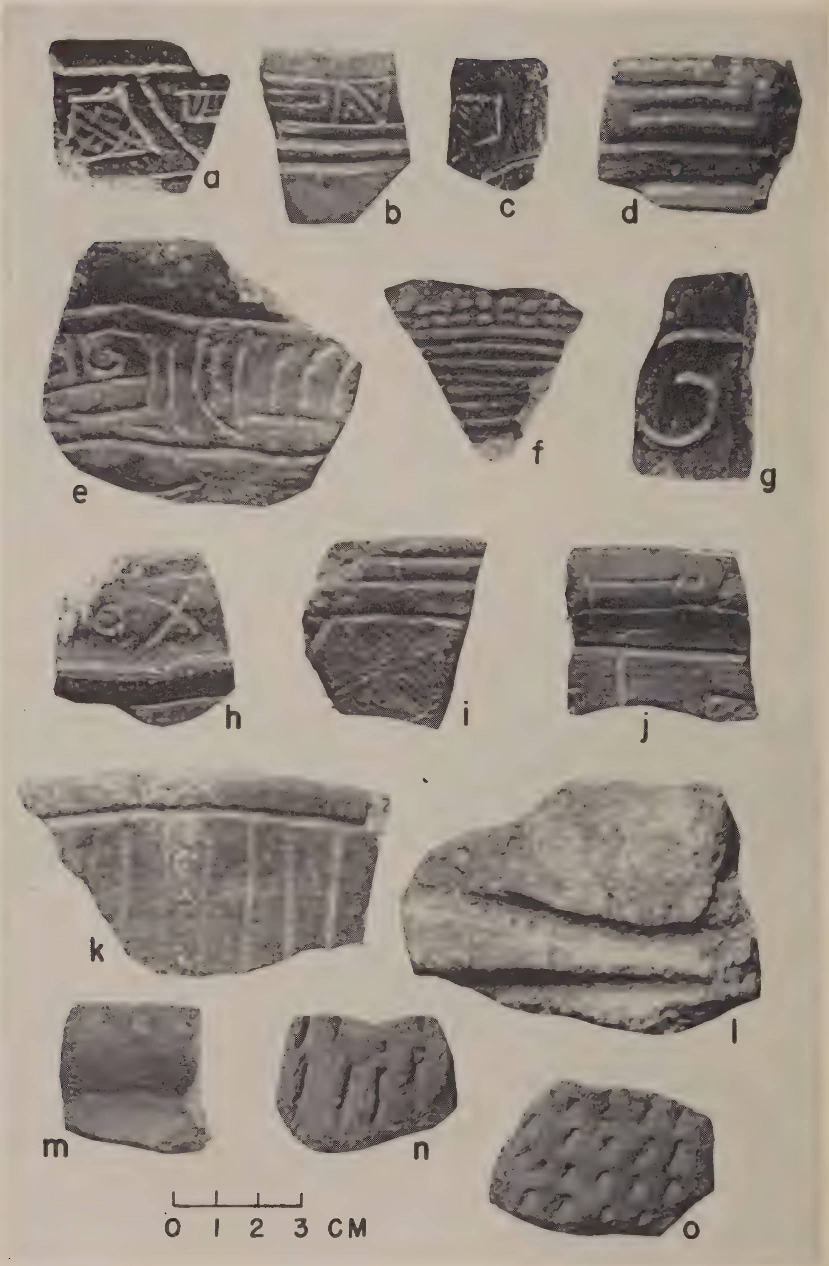
Type sherds of Acauan Excised with curvilinear motifs, Acauan Phase.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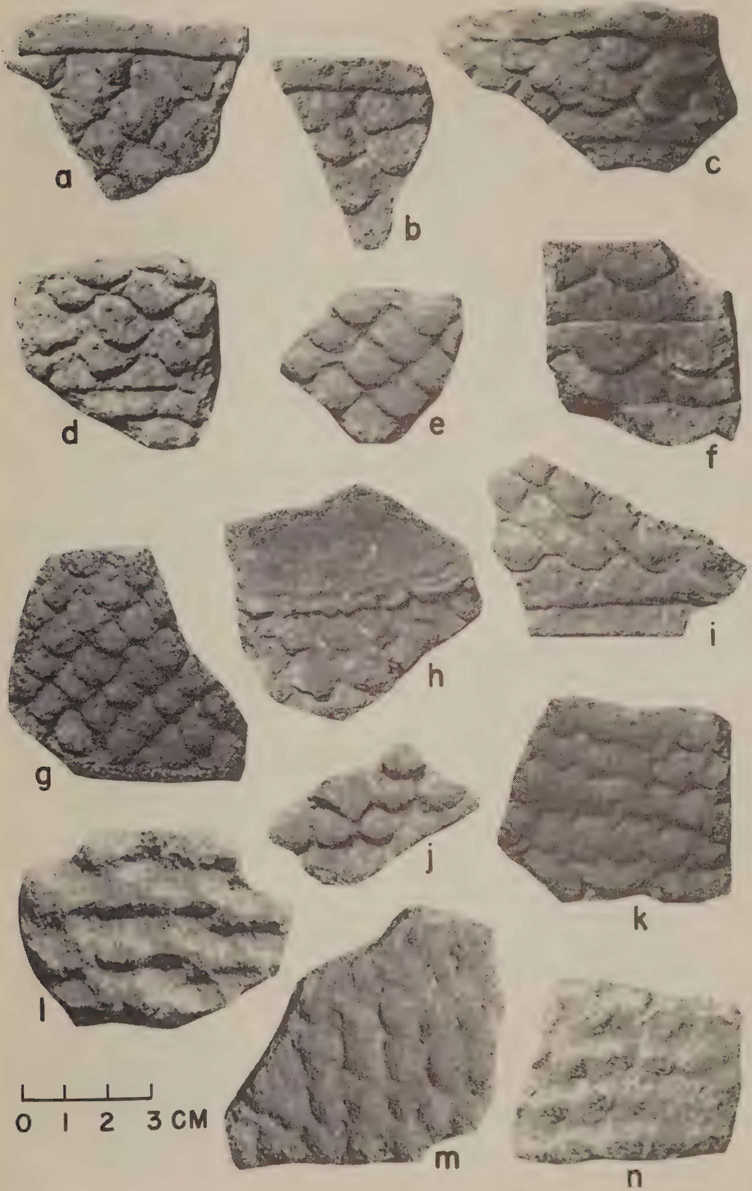
Acauan Phase pottery. *a–k*, Type sherds of Carobal Incised. *l–o*, Unclassified decorated sherds from M-3—Acauan.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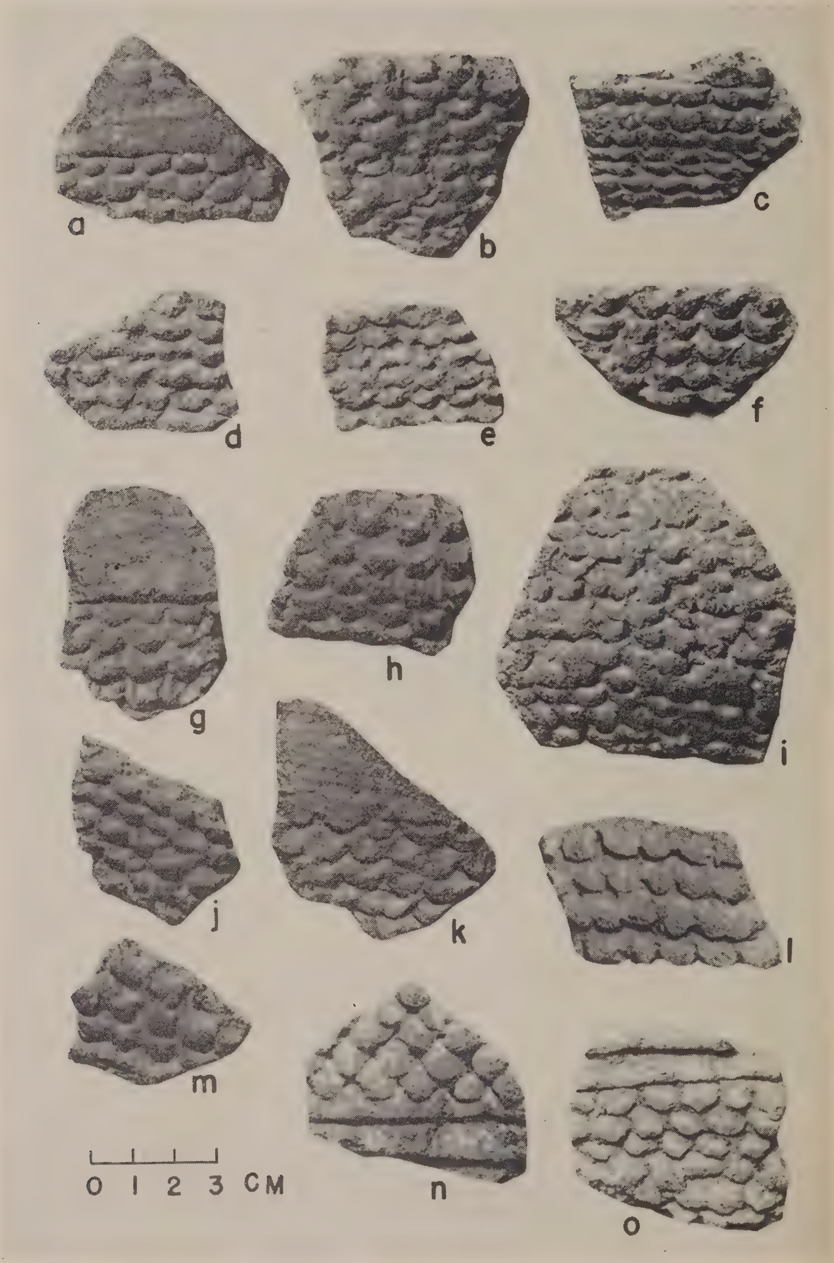
Type sherds of Floripes Corrugated, coarse variety; Acauan Phase.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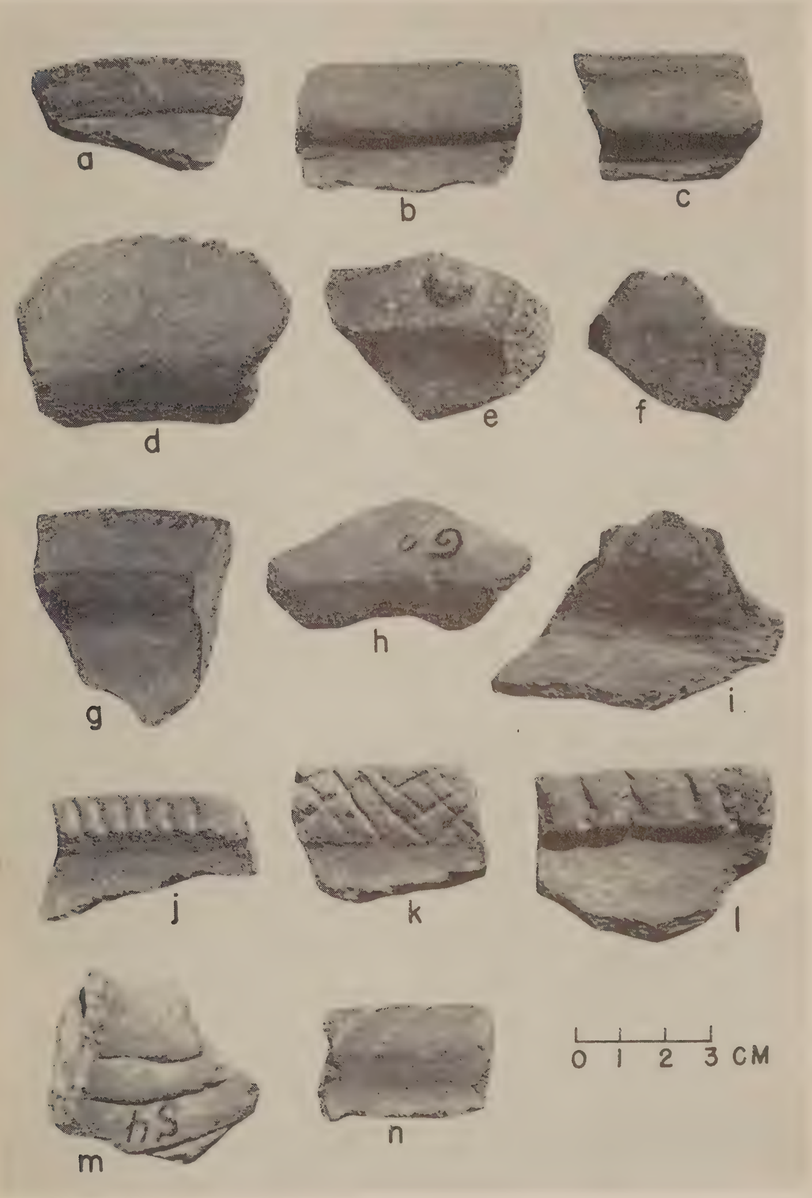
Type sherds of Floripes Corrugated, fine variety; Acauan Phase.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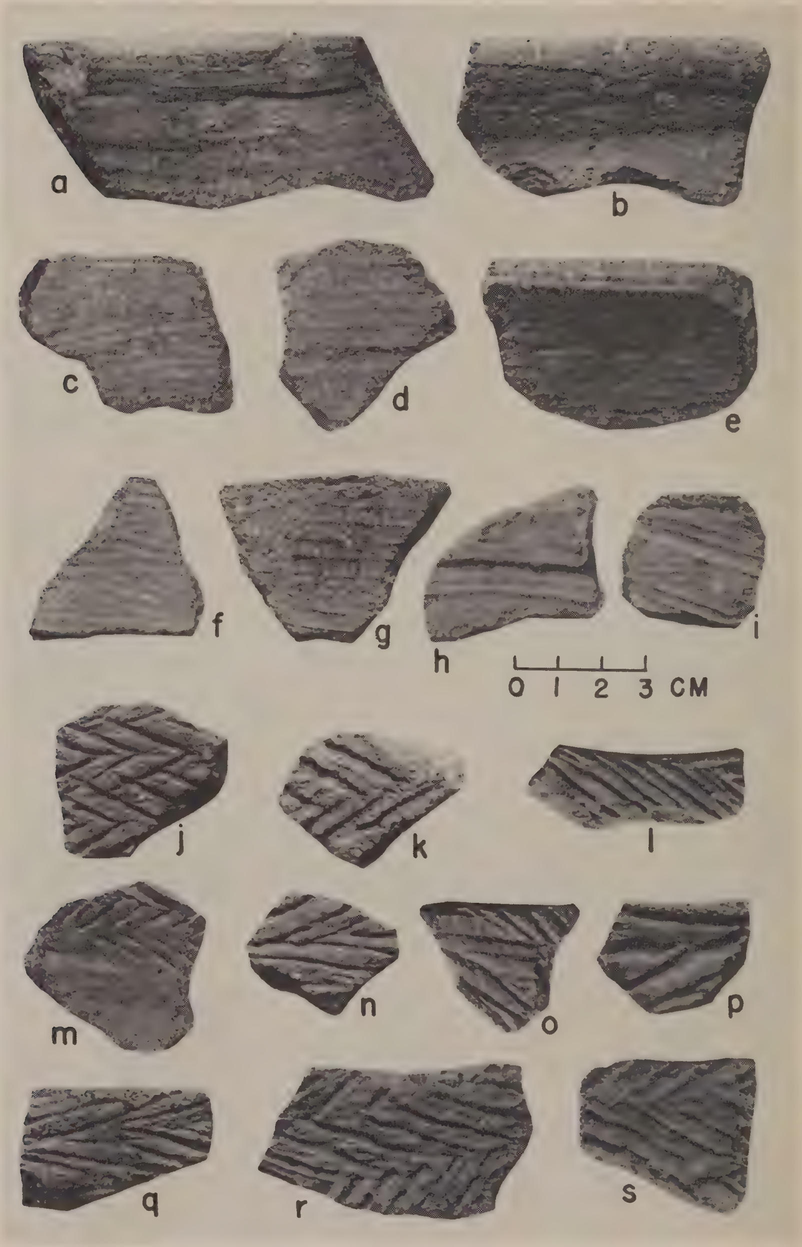
Ornamental rims of Piryzal Plain, Acauan Phase.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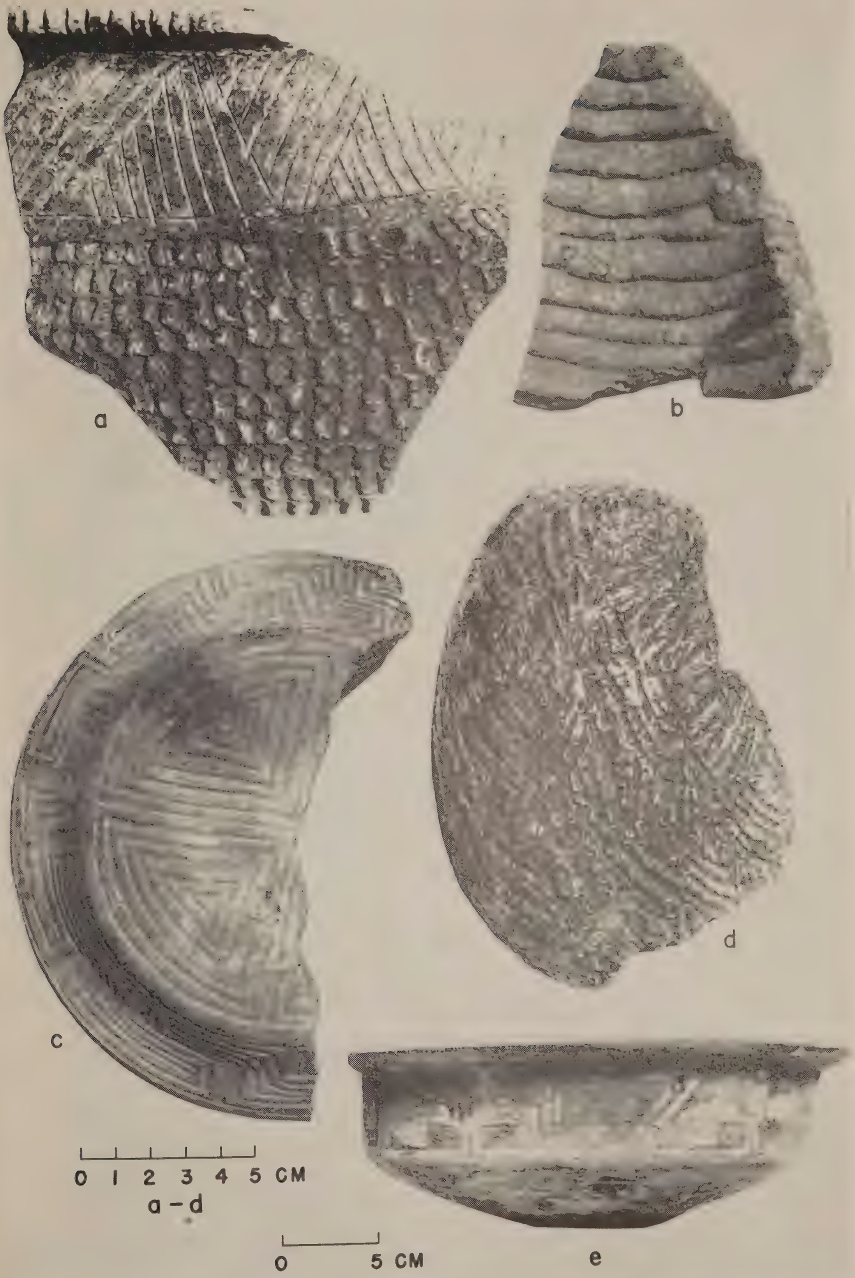
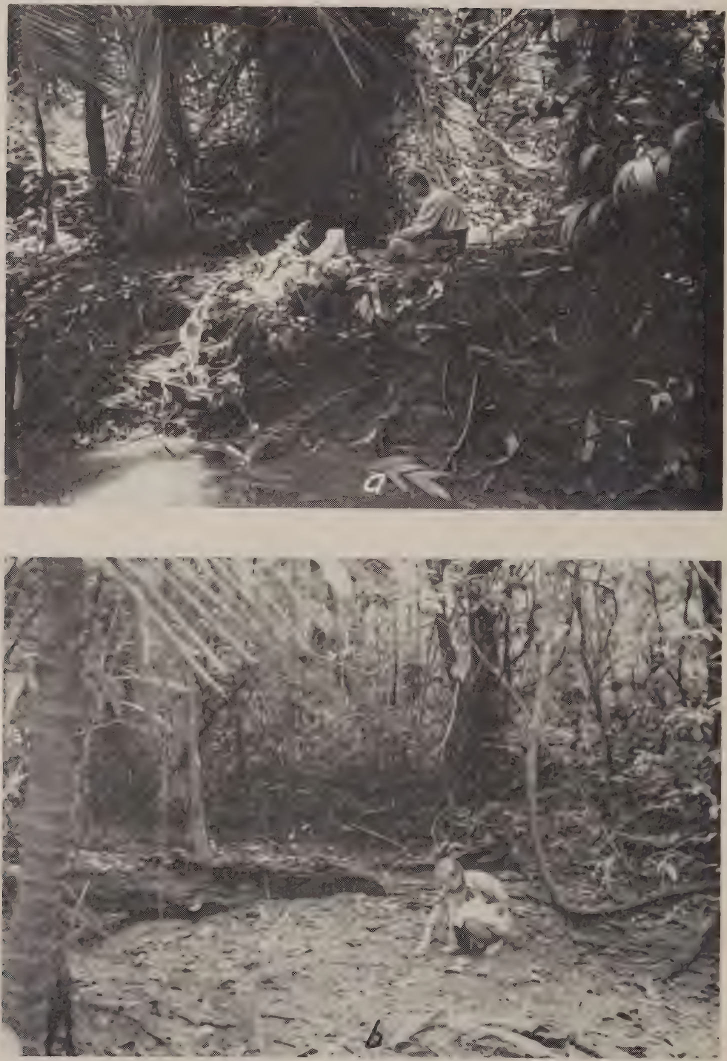
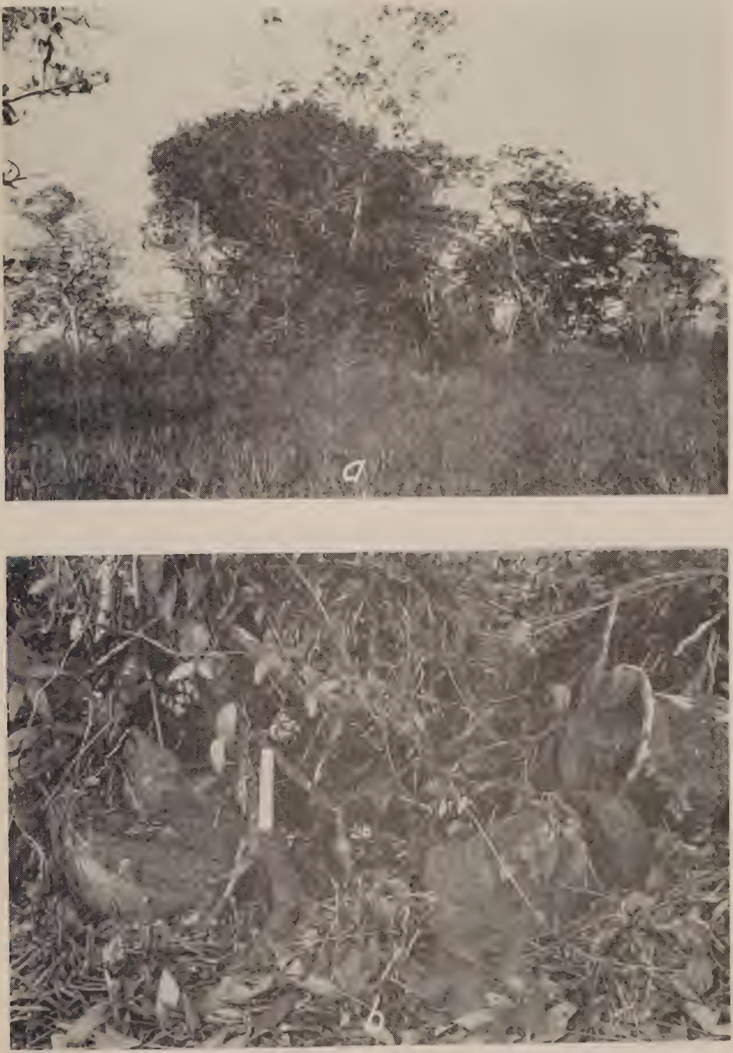
Decorated pottery types of the Acauan Phase. *a–i*, Type sherds of Paciencia Scraped. *j–s*, Type sherds of Vergal Incised.



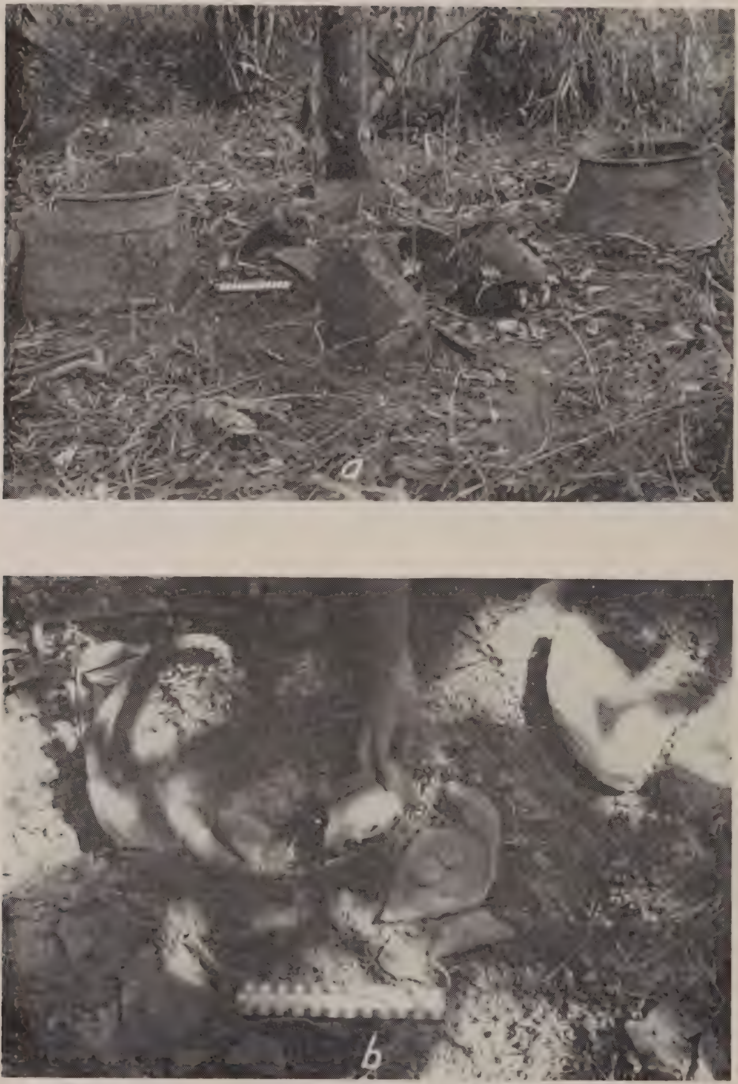
Decorated sherds from the Acauan Phase site of J–12—Jurupucú. *a*, Corrugated body with band of incision below the rim. *b*, Unsmoothed coils on the interior of a jar neck, incised on the exterior. *c* and *e*, Carobal Incised bowls. *d*, Jar body fragment with dentate stamping covering the exterior.



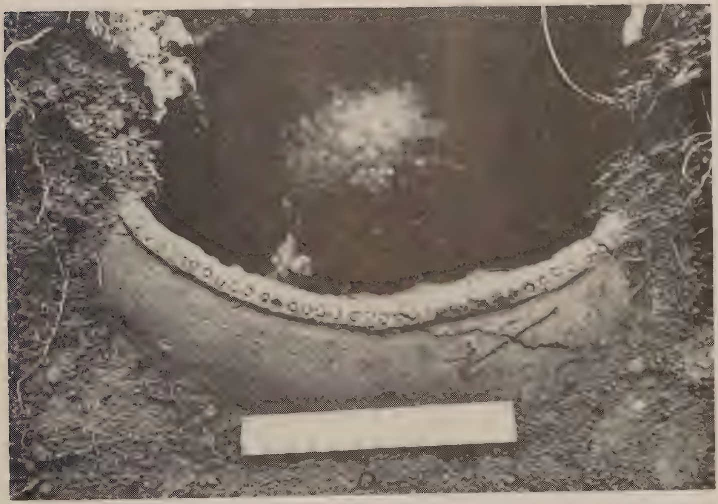
Aruã Phase habitation sites on Caviana Island: *a* C–14—Limãozinho. *b*, C–15—Patahua.



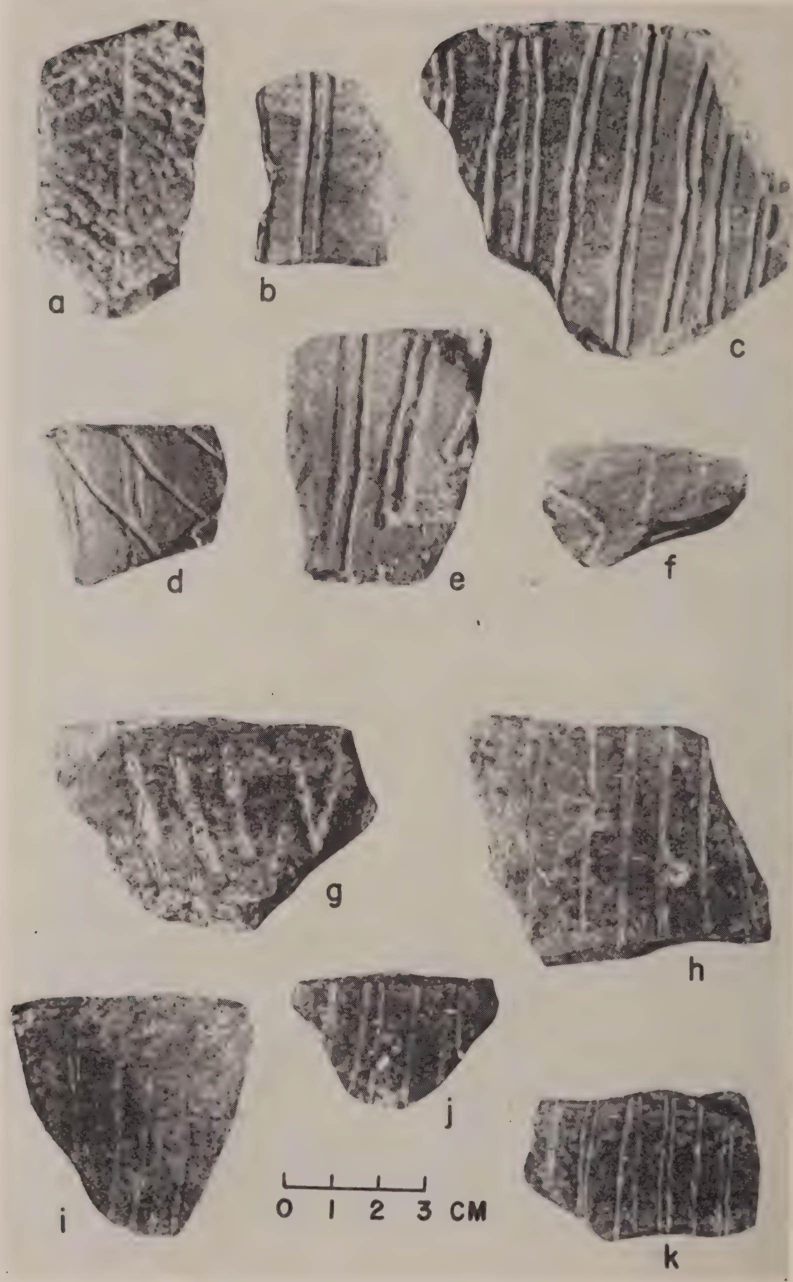
Aruã Phase cemetery of M–4—Fundo das Panellas. *a*, Tree-covered area containing the site. *b*, Closeup of jars showing the unexcavated condition.



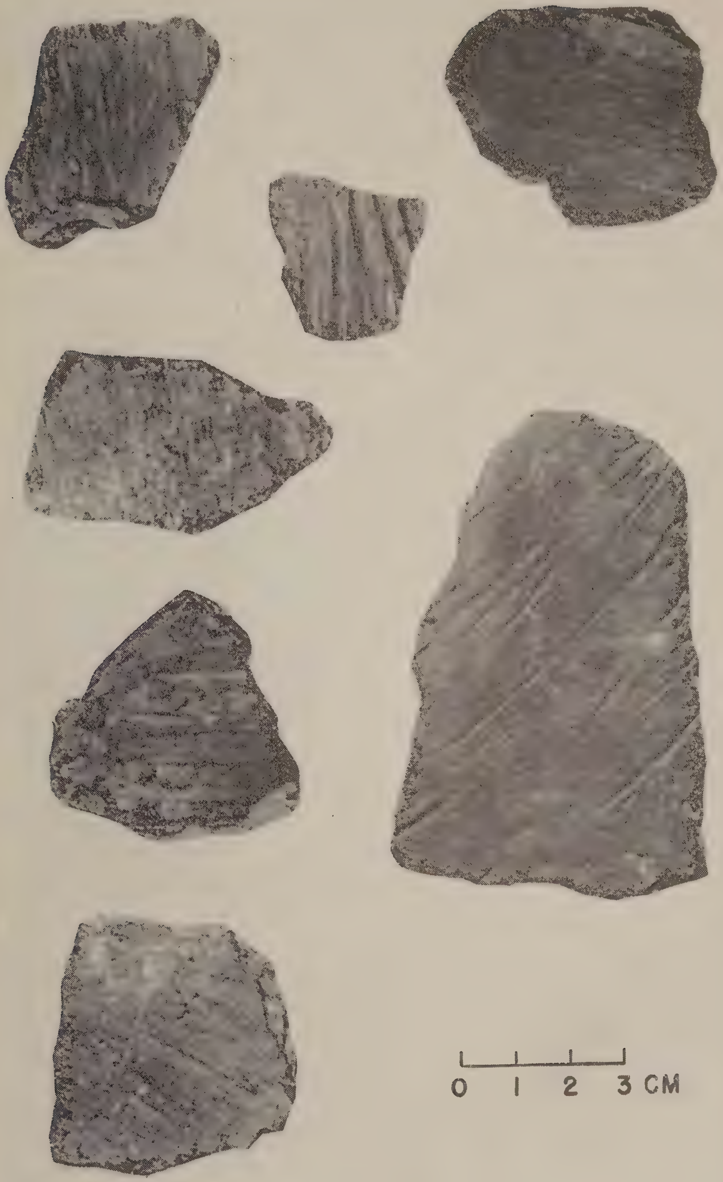
Aruã Phase cemeteries. *a*, M–4—Fundo das Panellas, Mexiana, with the vegetation cleared from a group of jars. *b*, C–11—Vaquejador de São Sebasteão, Caviana, with the contents of jar 4 in situ.



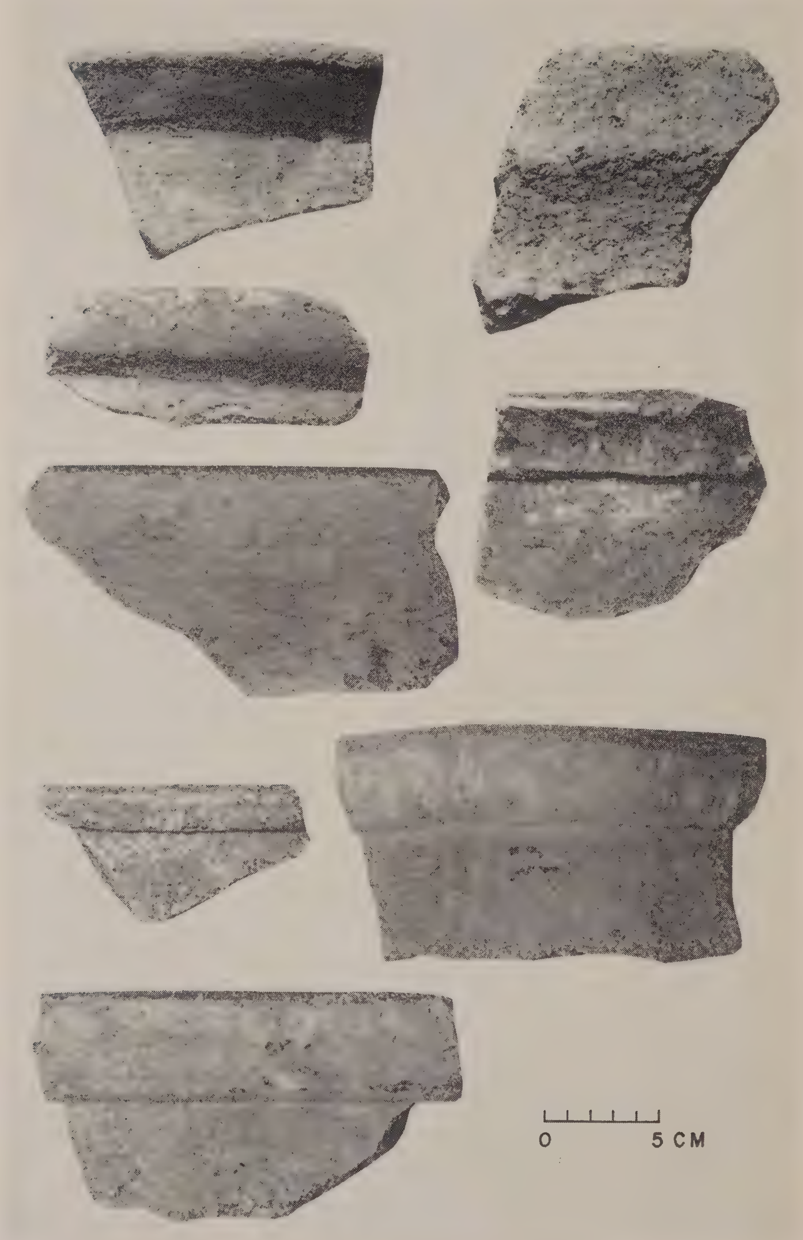
Aruã Phase site. *a*, C–4—Teso dos Indios, Caviana, showing the large tree covering the center of the site. *b*, A–5—Cafezal, Territory of Amapá, with the large jar in situ.


a
b
c
d
e
f
g
h
i
j
k
0 1 2 3 CM

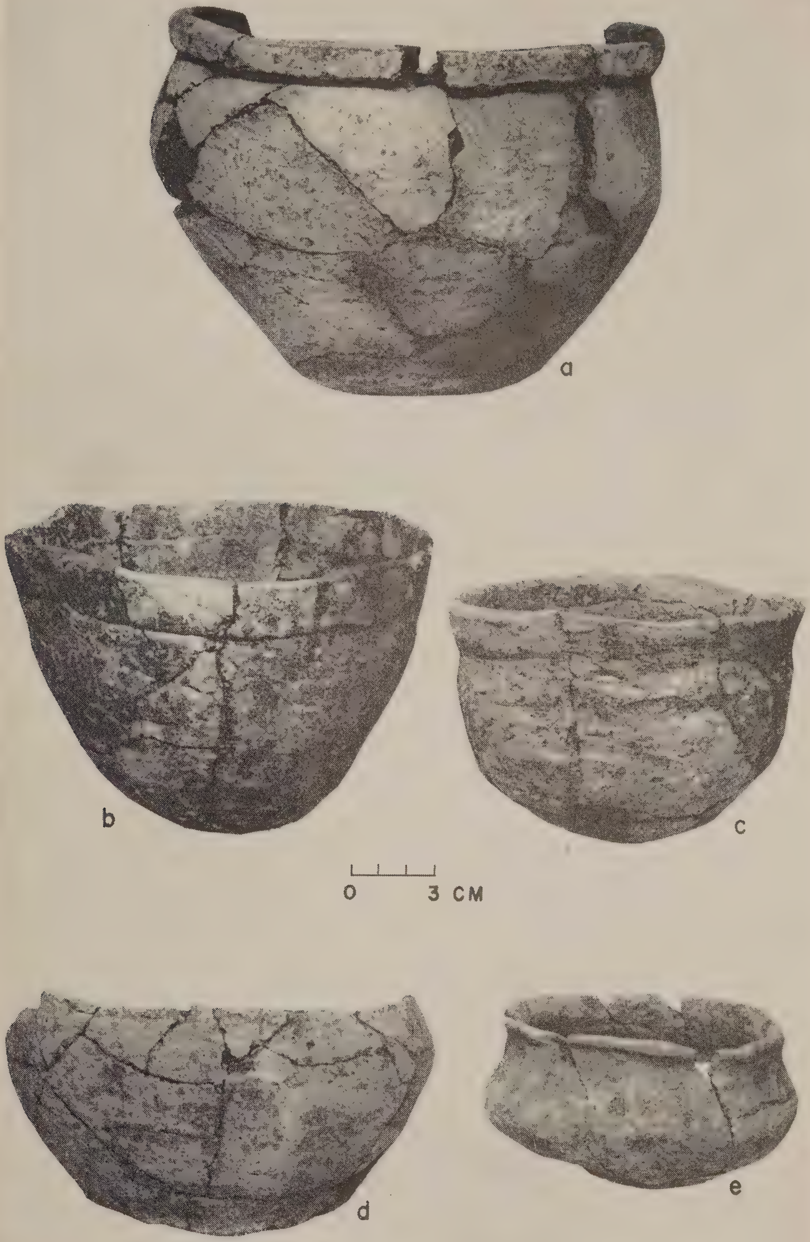
Type sherds of Aberta Incised, Aruã Phase. *a–f*, M–2—Papa Cachorro, Mexiana. *g–k*, A–8—Aurora, Territory of Amapá.



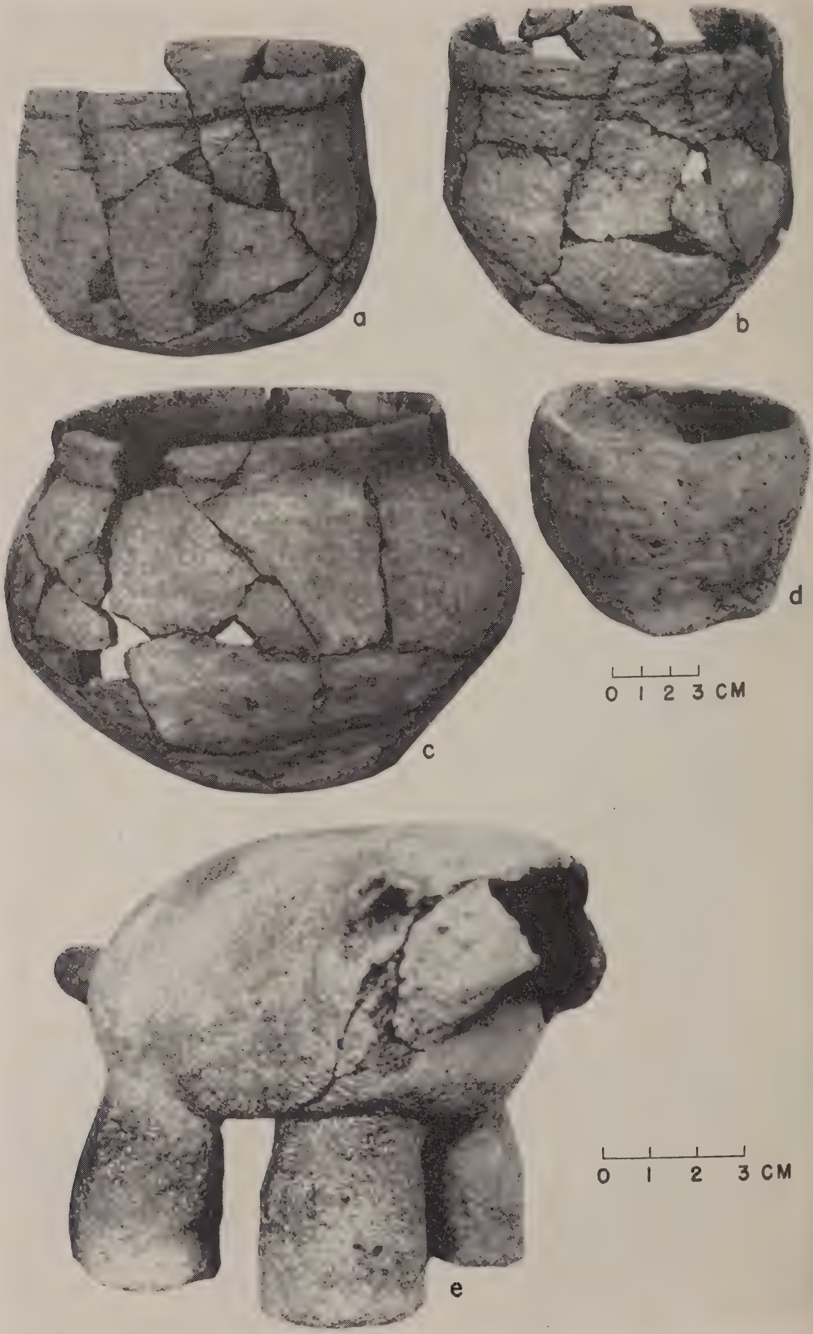
Type sherds of Nazaré Brushed, Aruã Phase.



Rim sherds of Piratuba Plain, Aruã Phase, showing typical thickening and folded-over treatment.



Small Piratuba Plain vessels associated with Aruã Phase burial jars. *a*, From inside jar 7, M-4—Fundo das Panellas. *b*, From inside jar 42, M-4—Fundo das Panellas. *c*, From inside jar 7, M-4—Fundo das Panellas. *d–e*, From inside jar 4, C-12—Condino.


a
b
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d
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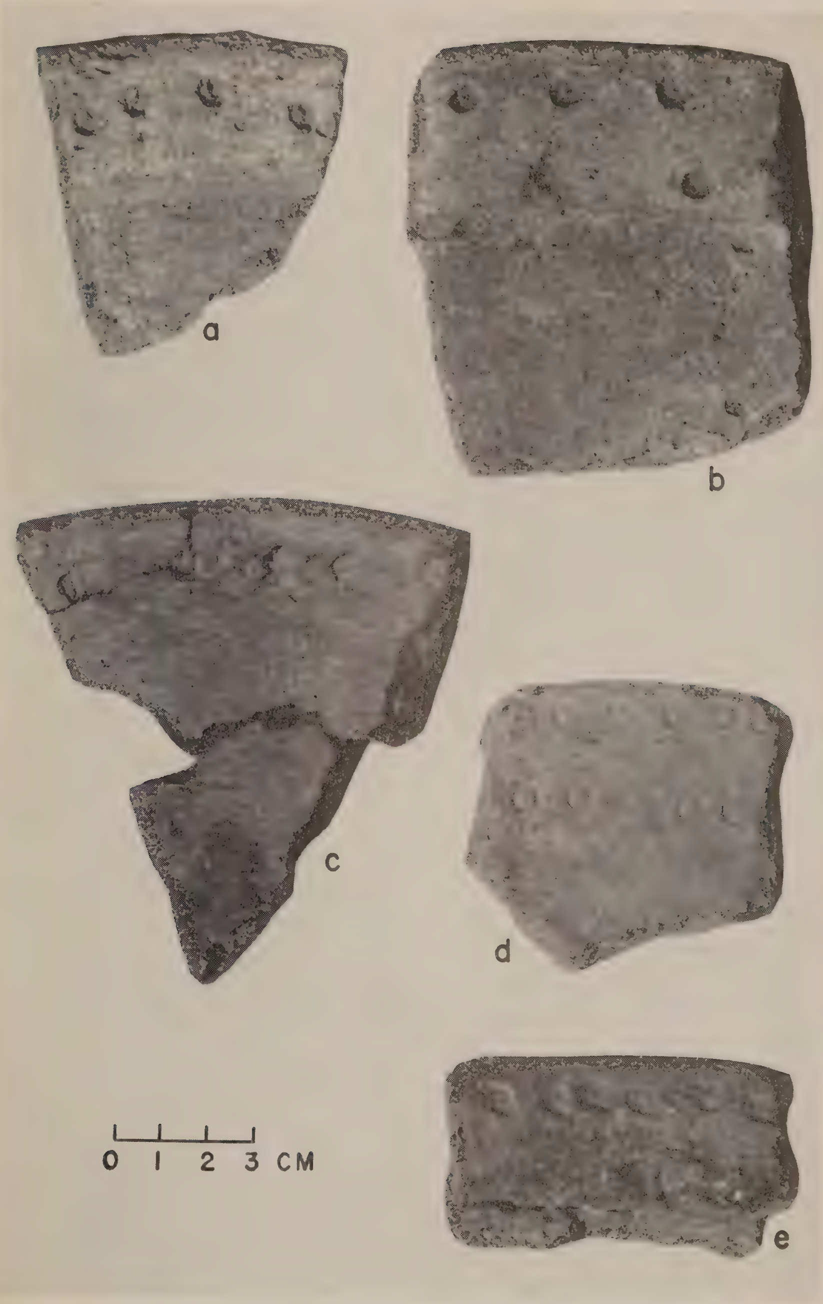
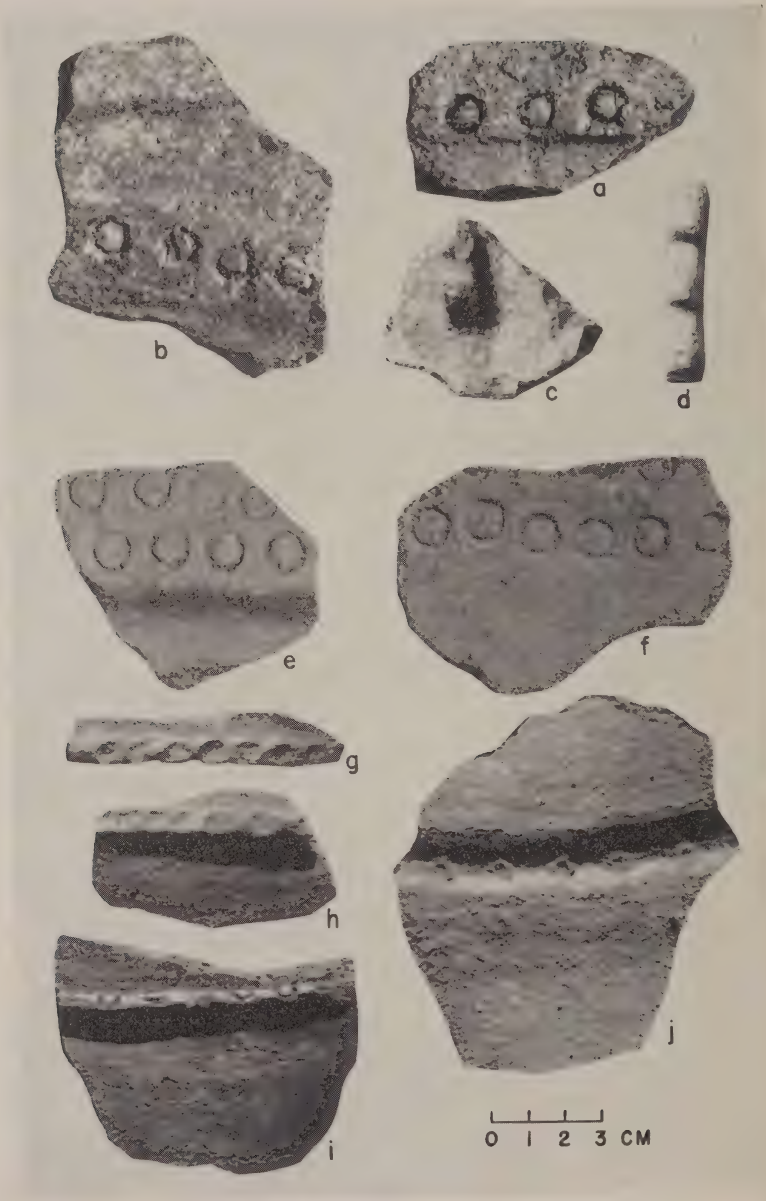
e
0 1 2 3 CM

Piratuba Plain vessels from M–5—Mulatinho, Mexiana: Aruã Phase. *a*, Bowl A. *b*, Bowl B. *c*, Bowl C. *d*, Bowl J. *e*, Vessel 23.



Sherds from Piratuba Plain platters or griddles with punctate decoration around the rim; Aruã Phase.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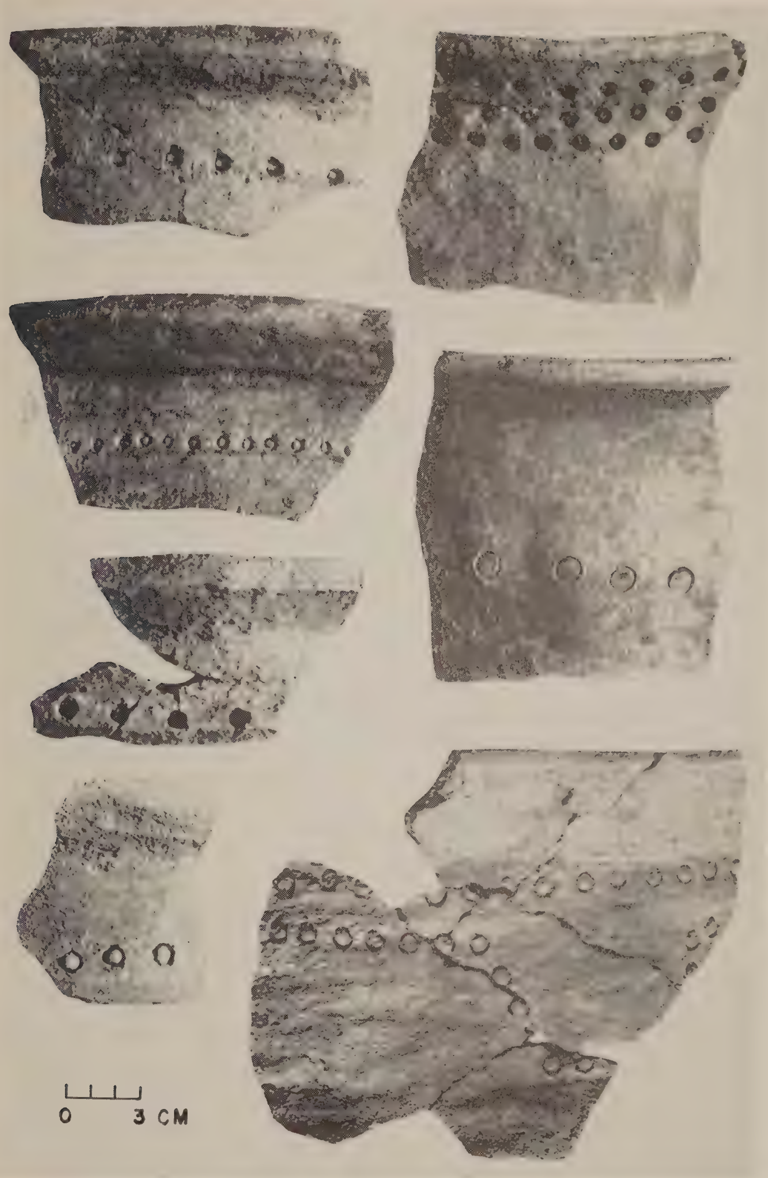
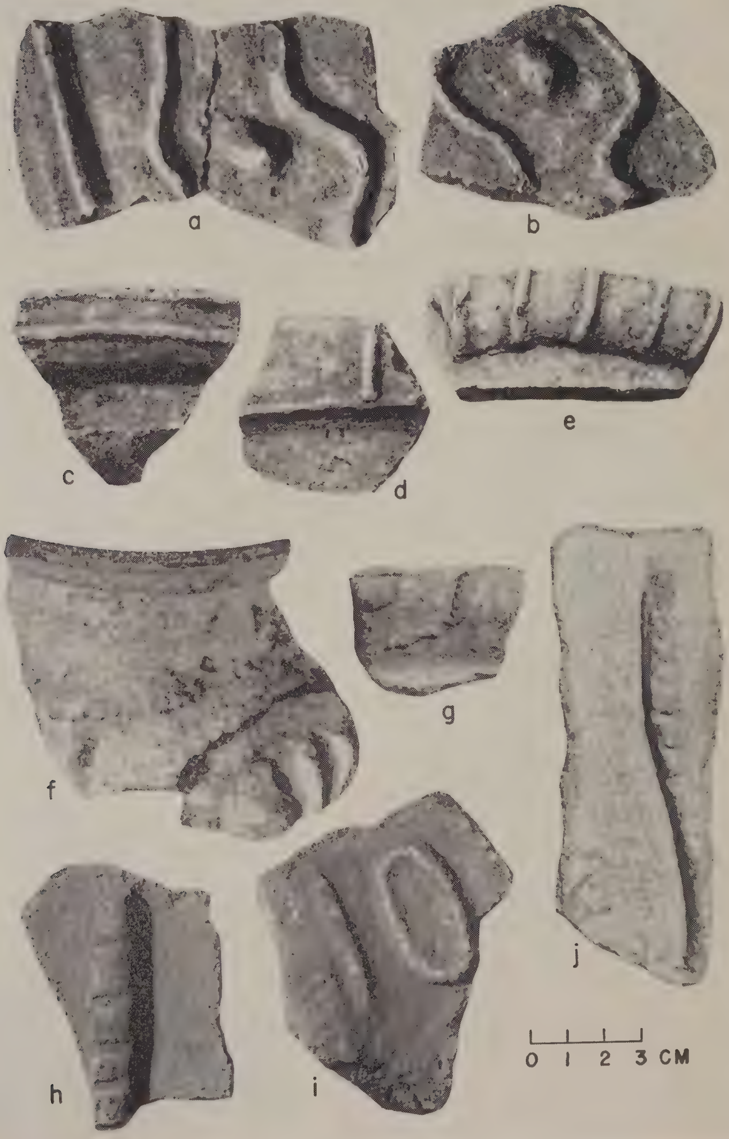
Piratuba Plain sherds with impressed ring decoration or appliqué ribs; Aruã Phase.



Piratuba Plain sherds with impressed ring decoration from M-4—Fundo das Panellas burial jars.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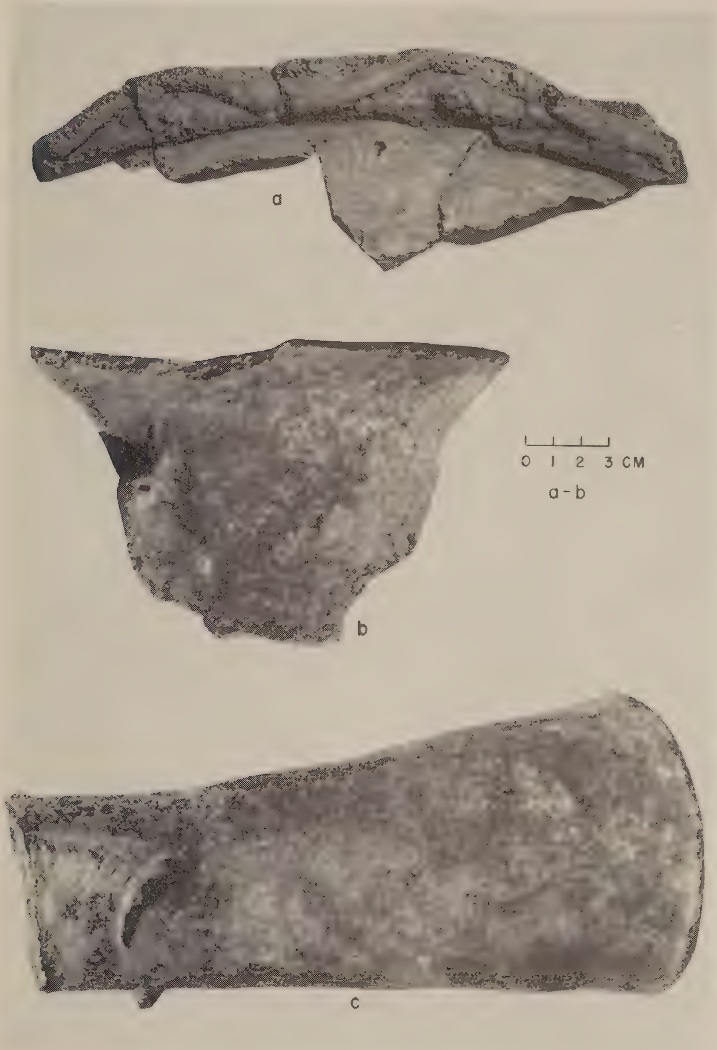
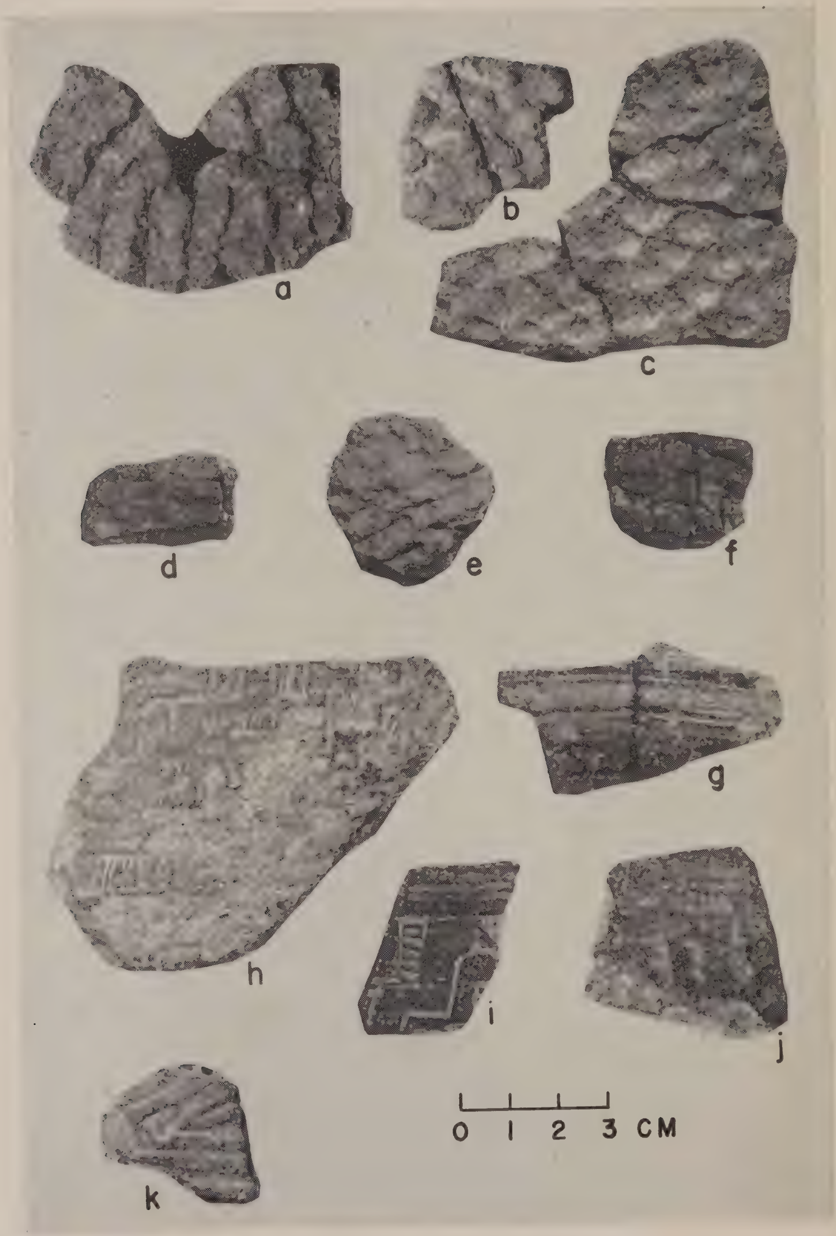
Piratuba Plain sherds with appliqué decoration. Aruã Phase.



Fragmentary vessels of Piratuba Plain, Aruã Phase. *a*, Rim of large Bowl A with appliqué on the exterior from inside jar 36, M–4—Fundo das Panellas. *b*, Pottery drum fragment (?) from M–7—Aberta. *c*, Pottery drum from M–8—Limão da Fora.



Miscellaneous sherds from Aruã Phase habitation sites. *a–f*, Unclassified corrugated. *g–k*, Arari Excised trade sherds of the Marajoara Phase from M–2—Papa Cachorro.

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